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THE FREELIVING MARINE NEMAS OF THE MEDITERRANEAN

I

THE BAY OF VILLEFRANCHE

BY

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INTRODUCTION (*)

In the last decade numerous researches have been made on the freeliving marine nemas of both the North Sea and the Baltic, so that nowadays we are fairly well informed upon the nemic fauna of that region. The nemic fauna of the Mediterranean however is very insufficiently known and we possess of that region only sporadic data, as the result of a few superficial studies of that sea.

I need to remember only to what has been done by EBERTH, ROUVILLE, MARION, DE MAN, MICOLETZKY, KREIS STEINER, COBB, ZUR STRASSEN, TUERK and SCHULZ being rather sure to have strived therewith all studies on the nemic fauna of this very interesting region, one of the most important traffic ways of the old world (1).

Therefore each gap, which may be filled up in our knowledge of this almost unknown field, is wellcome.

Now fortunately some very interesting collections of freeliving marine nemas, collected at different localities of this sea, which is the doorway to the Indies, touching at one side to the Atlantic, giving entrance at the other end to both the Sea of Marmora and the Black Sea and by means of the Canal of Suez to the Red Sea, were sent to me for study. Over these collections I hope to report in a near future (2). The most important of these collections,

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(*) The manuscript of the systematical part had been finished already as early as the end of 1937. The finishing touch to the figures and the introduction was closed in the beginning of 1942, since I found not sufficient time before that date to put the manuscript into final shape.

January 18th 1942.

(1) The results of these studies were published in 1942. Mediterranean freeliving Nematodes II Camarque III Balearic, Pityuses (Mededeelingen Leyden Museum and in 1943, IV freilebende marine Nematoden der Fischereigründe bei Alexandrien. *Zoologische Jahrbücher*, 1943 : 267-396 respectively).

(2) In 1942, after the manuscript was sent to the editor ALLGÉN published his : Die freilebenden Nematoden des Mittelmeeres : His own researches concern freeliving marine Nematoden of Banyuls-sur-Mer. For those who are interested I refer to this paper as it was impossible to take full account of this paper during the corrections of the printing proofs, 20th Dec. 1949, see page 23.

originated from Villefranche, and was collected by Dr. E. Leloup. « Conservateur à l'Institut royal des Sciences naturelles de Belgique », during his stay at the station of Villefranche in 1934. Prof. Dr. V. Van Straelen, Director of the Institute did entrust me this collection for further study, for which opportunity I will thank him very heartily at this place.

The collection embraces no less than 614 specimens belonging to 144 species of which 81 are new to science.

To give an idea of what has been performed on this field of research I will give a list of all species found up to the present date in the Mediterranean, the species in question arranged in the families to which they ought te be reckoned.

Order ENOPLOIDEA.

Family **LEPTOSOMATIDÆ.**

1. *Anticoma acuminata* (Eberth), Nice, Naples, different localities in the Adria, Banyuls, Cette, Mallorca, Ibiza, Alexandria.
2. *Anticoma leptura* (Marion), Marseille.
3. *Synonchus fasciculatus* Cobb, Naples.
4. *Synonchus hirsutus* Cobb, Naples.
5. *Synonchus strasseni* Tuerk, Naples.
6. *Platycoma cephalata* Cobb, Naples.
7. *Thoracostoma echinodon* Marion, Marseille.
8. *Thoracostoma steineri* Micoletzky, Naples, Alexandria.
9. *Thoracostoma figuratum* (Bastian), Nice, Marseille, Naples; according to Allgén (1942), synonymous with *Th. coronatum* (Eberth) like *Th. echinodon* Marion and *Th. coronatum* Villot.
10. *Thoracostoma montredonense* Marion, Marseille.
11. *Thoracostoma dorylaimus* Marion, Marseille.
12. *Thoracostoma zolæ* Marion, Marseille, Alexandria.
13. *Thoracostoma coronatum* (Eberth), Nizza.
14. *Thoracostoma globicaudatum* Schneider, Sicily, Messina.
15. *Cylicolaimus jaegerskjöldi* (Tuerk), Naples.
16. *Leptosomatum bacillatum* (Eberth), Nice, Naples.
17. *Leptosomatum punctatum* (Eberth), Nice.

Family **OXYSTOMATIDÆ.**

18. *Halalaimus gracilis* De Man, Adria, Rovigno, Bocche di Cattaro, Sea of Marmara.

Family **PHANODERMATIDÆ.**

19. *Phanoderma gracile* De Man, Naples.
20. *Phanoderma mediterranea* Micoletzky, Adria, Banyuls.
21. *Phanoderma aberrans* Micoletzky, Adria.
22. *Phanoderma laticolle* (Marion), Marseille, Alexandria.
23. *Phanoderma tuberculatum* (Eberth), Nice, Messina.
24. *Phanoderma setigerum* (Marion), Marseille.

Family **ENOPLIDÆ.**

25. *Enoplus striatus* Eberth, Nice, Messina, Banyuls.
26. *Enoplus hirtus* (Marion), Marseille, Sea of Marmara.
27. *Enoplus minus* (Marion), Marseille.
28. *Enoplus obtusicaudatus* Eberth, Nice.
29. *Enoplus meridionalis* Steiner, Teneriffa, Alexandria, Ibiza.
30. *Enoploides italicus* Steiner, Adria.
31. *Syringolaimus striaticaudatus* De Man, Adria, Rovigno, Ombla Bay, Bocche di Cattaro, Ischia, Sea of Marmara.

Family **ONCHOLAIMIDÆ.**

32. *Paroncholaimus parpapilliferus* Micoletzky, Adria, Bocche di Cattaro, Banyuls.
33. *Pelagonema simplex* Cobb, Ischia, Rovigno.
34. *Metaparoncholaimus campylocercus* (De Man), Naples.
35. *Viscosia glabra* (Bastian), Naples, Ischia, Rovigno, Bocche di Cattaro, Meleda, Ombla Bay, Alexandria, Ibiza, Banyuls.
36. *Prooncholaimus megastoma* (Eberth), Nice, Naples, Ischia, Adria, Rovigno, Ombla Bay, Bocche di Cattaro.
37. *Prooncholaimus mediterraneus* Schuurmans Stekhoven (= *Prooncholaimus megastoma* Micoletzky, nec Eberth), Naples, Alexandria.
38. *Oncholaimus dujardini* De Man, Naples, Cette, Ischia, Adria, Rovigno, Ombla Bay, Bocche di Cattaro, Alexandria, Mallorca, Ibiza, Banyuls.
39. *Oncholaimus papillosus* Eberth, Nice, Naples.

40. *Oncholaimus armatus* VON DADAY, Fiume.
41. *Metoncholaimus pristiurus* (zur STRASSEN), Naples, Cette, Banyuls.
42. *Metoncholaimus demani* (zur STRASSEN), Naples.
43. *Vasculonema cæruleum* EBERTH, Nice.

Family **ENCHELIDIIDÆ.**

44. *Eurystomatina ornatum* EBERTH, Nice, Fiume, Rovigno, Banyuls.
45. *Eurystomatina spectabile* MARION, Marseille.
46. *Enchelidium acuminatum* EBERTH, Nice, Naples, Ischia, Adria, Meleda, Rovigno.
47. *Enchelidium bierstedti* (MARION), Marseille.
48. *Enchelidium marinum* EHRENBERG, Nice.
48. *Enchilidium paradoxum* (MARION), Marseille.
50. *Enchelidium eberthi* DE MAN, Naples.
51. *Enchelidium exile* (MARION), Marseille.
52. *Enchelidium subrotundum* (EBERTH), Nice.
53. *Symplocostoma pauli* (MARION), Marseille, Naples, Ischia, ? Rovigno, Meleda, Bocche di Cattaro.
54. *Symplocostoma tenuicolle* DE MAN, Cette, Marseille, Banyuls.
55. *Bolbella cobbi* MICOLETZKY, Adria, Rovigno.

Order CHROMADORIIDEA.

Family **CYATHOLAIMIDÆ.**

56. *Paracanthonchus steueri* (MICOLETZKY), Naples, Adria, Rovigno.
57. *Paracanthonchus arcuatus* KREIS, Taormina.
58. *Praeacanthonchus mediterraneus* MICOLETZKY, Cette.
59. *Praeacanthonchus guarneriensis* VON DADAY, Fiume, questionable species.
60. *Longicyatholaimus longicaudatus* (DE MAN), Naples, Alexandria.
61. *Cyatholaimus gracilis* (EBERTH), Nice Marseille, Naples, Cette, Messina, Sea of Marmara, Banyuls.
62. *Cyatholaimus canariensis* STEINER, Teneriffa, Mallorca.
63. *Cyatholaimus prinzi* (MARION), Marseille.
64. *Cyatholaimus oculatus* (MARION), Marseille.
65. *Cyatholaimus striatipunctatus* (MARION), Marseille.

Family **DESMODORIDÆ.**

66. *Heterodesmodora varioannulata* KREIS, Naples.
67. *Heterodesmodora ditlevseni* MICOLETZKY, Naples.
68. *Monoposthia costata* DE MAN, Teneriffa, Messina, Ibiza, Banyuls.
69. *Aculeonchus sphaericus* KREIS, Naples, Banyuls.
70. *Acanthopharynx perarmata* (MARION), Marseille, Naples, Ibiza.
71. *Acanthopharynx micans* (EBERTH), Nice, Marseille, Naples, Rovigno, Sea of Marmara, Banyuls.
72. *Acanthopharynx affinis* MARION, Marseille, Mallorca.
73. *Laxus contortus* COBB, Naples.
74. *Spirina parasitifera* (BASTIAN), Cette.

I think ALLGÉN (1932, p. 440) is right in considering *Desmodora angusticollis* DADAY and *Desmodora papillata* DADAY as questionable species. They are not considered here.

Family **CHOANOLAIMIDÆ.**

75. *Demonema rapax* COBB, Naples.

Family **CHROMADORIDÆ.**

76. *Spilophorella mediterranea* MICOLETZKY, Ischia, Adria, Rovigno, Ombla Bay, Bocche di Cattaro, Camarque, Banyuls.
77. *Chromadorina parva* (DE MAN), Teneriffa, Adria, Rovigno, Meleda, Ombla Bay, Bocche di Cattaro, Banyuls.
78. *Chromadorina læta* (DE MAN), Naples, Quarnero, Rovigno, Ombla Bay, Sea of Marmara, Banyuls.
79. *Chromadorita magna* SCHULZ, Messina.
80. *Euchromadora loricata* (STEINER), Naples, Bocche di Cattaro, Taormina.
81. *Euchromadora striata* (EBERTH), Nice, Fiume, Naples, Ischia, Adria, Alexandria, Sea of Marmara, Black Sea, Banyuls.
82. *Rhabdodotoderma morstatti* (MARION), Marseille.
83. *Prochromadorella neapolitana* (DE MAN), Naples, Adria, Bocche di Cattaro, Alexandria.
84. *Prochromadorella mediterranea* (MICOLETZKY), Adria, Rovigno, Meleda, Ombla Bay, Ragusa, Bocche di Cattaro, Mallorca.
85. *Dichromadora parapœcilosoma* (MICOLETZKY), Camarque, Adria, Meleda, Ombla Bay, Alexandria, Bocche di Cattaro, Sea of Marmara.
86. *Dichromadora pœcilosomoides* (FILIPJEV), Messina, Banyuls.

87. *Paroxystomina asymmetrica* MICOLETZKY, Rovigno, Bocche di Cattaro, Meleda.
88. *Chromadora quadrilinea* FILIPJEV, Naples, Adria.
89. *Chromadora chlorophthalma* DE MAN, an insufficiently known species, after Allgén (in litteris synonym with *C. nudicapitla*, Naples).
90. *Chromadora nudicapitata* BASTIAN, Cette, Quarnero, with which apart from *C. chlorophthalma*, *Chromadora flamoniensis* VON DADAY and *Chromadora quarneriensis* VON DADAY should by identical, Banyuls.
91. *Chromadorella membranata* MICOLETZKY, Adria.

Family **DRACONEMATIDÆ.**

92. *Draconema claparedei* METSCHNIKOFF, Naples, Salerno.
93. *Draconema cephalatum* COBB, Naples.
94. *Draconema ophiocephalum* CLAPARÈDE, Saint-Vaast.
95. *Draconema micoletzkyi* KREIS, Taormina.
96. *Draconema tristichochæta* PANCERI, Ischia, Naples.
97. *Draconema longirostrum* SCHEPOTIEFF, Naples.
98. *Draconema macrocephalum* SCHEPOTIEFF, Naples.

Family **EPSILONEMATIDÆ.**

99. *Prochætosoma cygnoides* (METSCHNIKOFF), Naples.

Family **COMESOMIDÆ.**

100. *Sabatieria cettensis* DE ROUVILLE, Cette.

Order ARÆOLAIMOIDEA.

Family **AXONOLAIMIDÆ.**

101. *Aræolaimus bioculatus* (DE MAN), Naples, Adria, Rovigno, Cattaro, Alexandria.
102. *Aræolaimoides mediterraneus* (DE MAN), Naples, Ischia, Adria, Rovigno, Meleda, Ombla Bay, Bocche di Cattaro.
103. *Metaræolaimoides oxystoma* DE CONINCK, Sardinia.
104. *Diplopeltis cirrhatus* (EBERTH), Nice, Naples, Banyuls.

Family **CAMACOLAIMIDÆ.**

105. *Ionema isseli* MICOLETZKY, Rovigno, Meleda, Bocche di Cattaro, Banyuls.

Family **HALAPHANOLAIMIDÆ.**

106. *Ægialoalaimus tenuis* (KREIS), Naples.

Order MONHYSTEROIDEA.

Family **LINHOMOEIDÆ.**

107. *Linhomœus obtusicaudatus* DE MAN, Adria, Rovigno, Melada, Ombla Bay, Bocche di Cattaro, Banyuls.
108. *Metalinhomœus elegans* KREIS, Naples.

Family **MONHYSTERIDÆ.**

109. *Paramonhystera paranormandica* (MICOLETZKY), Adria, Rovigno, Ombla Bay, Bocche di Cattaro, Naples, Ischia, Alexandria.
110. *Metalaimus gracilis* KREIS, Naples.
111. *Rhabdocoma macrurum* COBB, Naples.
112. *Monhystera macrolabiata* KREIS, Naples.
113. *Monhystera heteroparva* MICOLETZKY, Adria.
114. *Monhystera parva* DE MAN, Adria.
115. *Theristus tzhoricus* (FILIPJEV), Messina.

Family **SIPHONOLAIMIDÆ.**

116. *Siphonolaimus niger* DE MAN, Naples.
117. *Siphonolaimus weissmanni* (zur STRASSEN), Naples.
118. *Siphonolaimus nigricans* (COBB), Naples.
119. *Solenolaimus obtusus* COBB, Naples.

Order DESMOSCOLECOIDEA.

Family **DESMOSCOLECIDÆ.**

120. *Desmoscolex minutus* CLAPARÈDE, Brindisi, Naples.
121. *Desmocolex adriaticus* SCHEPOTIEFF, Rovigno, Brindisi, Naples.
122. *Desmoscolex lævis* KREIS, Taormina.
123. *Eudesmoscolex chætogaster* (GREEFF), Naples.
124. *Tricoma nematoides* (GREEFF), Naples.
125. *Tricoma cincta* COBB, Naples.

Family **GREEFFIELLIDÆ.**

126. *Greeffiella oxycaudata* GREEFF, Naples, Ischia, Salerno, Rovigno.

Order ANGUILLULOIDEA.

Family **TYLENCHIDÆ.**

127. *Halenchus mediterraneus* (MICOLETZKY), Adria, Rovigno, Meleda, Bocche di Cattaro, Banyuls.

During my studies of the freeliving marine nematodes of the Baleares, Alexandria. and the Camarque I observed the following forms :

Order ENOPLOIDEA.

Family **LEPTOSOMATIDÆ.**

128. *Anticoma pellucida* BASTIAN, Alexandria.
129. *Leptosomatum longiseta* SCHUURMANS STEKHOVEN, Alexandria.

Family **OXYSTOMATIDÆ.**

130. *Halalaimus longicauda* ALLGÉN, Mallorca.
131. *Trefusia filum* SCHUURMANS STEKHOVEN, Mallorca.

Family **PHANODERMATIDÆ.**

132. *Phanoderma albidum* BASTIAN, Alexandria, Banyuls.

Family **ENOPLIDÆ.**

133. *Enoplus littoralis* FILIPJEV, Alexandria,
134. *Enoplus flagellicaudatus* SCHUURMANS STEKHOVEN, Alexandria.
135. *Enoploides longisetosus* SCHUURMANS STEKHOVEN, Alexandria.

Family **DORYLAIMIDÆ.**

136. *Syringolaimus brevicaudatus* MICOLETZKY, Alexandria.
137. *Dolicholaimus nudus* SCHUURMANS STEKHOVEN, Alexandria.
138. *Dorylaimus filiformis* BASTIAN, Alexandria.

Family **ONCHOLAIMIDÆ.**

139. *Oncholaimus paroxyuris* SCHUURMANS STEKHOVEN, Camarque.
140. *Oncholaimus brevicaudatus* FILIPJEV, Alexandria, Black Sea.
141. *Oncholaimellus mediterraneus* SCHUURMANS STEKHOVEN, Mallorca.
142. *Viscosia langrunenis* DE MAN, Alexandria.
143. *Viscosia palmæ* SCHUURMANS STEKHOVEN, Mallorca.
144. *Viscosia cobbi* FILIPJEV, Alexandria.
145. *Viscosia ægyptica* (STEINER), Alexandria.
146. *Anoplostoma viviparum* DE MAN, Camarque.
147. *Mononcholaimus elegans* KREIS, Camarque.

Family **ENCHELIDIIDÆ.**

148. *Eurystomatina terricola* (EBERTHJ, Mallorca.
149. *Eurystomatina assimile* (DE MAN), Alexandria, Black Sea, Fiume, Naples.
150. *Symplocostoma marioni* FILIPJEV, Alexandria.
151. *Symplocostoma ponticum* FILIPJEV, Alexandria, Sea of Marmara, Black Sea.
152. *Conistomella brevicaudata* SCHUURMANS STEKHOVEN, Mallorca.
153. *Bradystoma longisetosum* SCHUURMANS STEKHOVEN, Alexandria.
154. *Bolbella alexandriæ* SCHUURMANS STEKHOVEN, Alexandria.

Order CHROMEDOROIDEA.

Family **CYATHOLAIMIDÆ.**

155. *Cyatholaimus paragracilis* SCHUURMANS STEKHOVEN, Mallorca.
156. *Cyatholaimus demani* FILIPJEV, Alexandria, Black Sea.
157. *Paracyatholaimus choanolaimoïdes* SCHUURMANS STEKHOVEN, Mallorca.
158. *Metacyatholaimus hirschi* SCHUURMANS STEKHOVEN, Mallorca.
159. *Paracanthonchus micoletzkyi* SCHUURMANS STEKHOVEN, Alexandria.
160. *Paracanthonchus elongatus* (DE MAN), Alexandria.

Family **DESMODORIDÆ.**

161. *Desmodora pontica* FILIPJEV, Alexandria.
162. *Metadesmodora amphidiscata* SCHUURMANS STEKHOVEN, Mallorca.
163. *Acanthopharynx micramphis* SCHUURMANS STEKHOVEN, Ibiza.
164. *Acanthopharynx setosissima* SCHUURMANS STEKHOVEN, Alexandria.

Family **CHROMADORIDÆ.**

165. *Spilophorella euxina* FILIPJEV, Mallorca.
166. *Dichromadora microdonta* KREIS, Mallorca.
167. *Chromadora brevipapillata* MICOLETZKY,
168. *Pareuchromadora setifer* n. sp., Alexandria. Alexandria, Mallorca.
169. *Chromadorina gracilis* FILIPJEV, Alexandria, Black Sea.
170. *Hypodontolaimus ponticus* FILIPJEV, Mallorca, Black Sea.
171. *Hypodontolaimus monodon* SCHUURMANS STEKHOVEN, Camarque.

Family **MICROLAIMIDÆ.**

172. *Microlaimus obtusicauda* SCHUURMANS STEKHOVEN, Alexandria.

Family **COMESOMIDÆ.**

173. *Sabatieria hilarula* DE MAN, Mallorca.
174. *Sabatieria tenuicaudata* (BASTIAN), Alexandria.

Order ARÆOLAIMOIDEA.

Family **HALAPHANOLAIMIDÆ.**

175. *Halaphanolaimus minutus* SCHUURMANS STEKHOVEN, Mallorca.
176. *Ægialoalaimus tenuicaudatus* ALLGÉN, Mallorca.

Family **CERAMONEMATIDÆ.**

177. *Pselionema annulatum* (FILIPJEV), Mallorca,

Family **TRIPYLOIDIDÆ.**

178. *Tripyloides demani* FILIPJEV, Camarque, Black Sea.
179. *Bathylaimus assimilis* DE MAN, Camarque.

Order MONHYSTEROIDEA.

Family **LINHOMOEIDÆ.**

180. *Metalinhomœus effilatus* SCHUURMANS STEKHOVEN, Mallorca.
181. *Paralinhomœus amphilabiatus* SCHUURMANS STEKHOVEN, Mallorca.
182. *Linhomœus macramphis* SCHUURMANS STEKHOVEN, Mallorca.
183. *Eleutherolaimus elegans* SCHUURMANS STEKHOVEN, Mallorca.
184. *Sphærocephalum bulbifera* SCHUURMANS STEKHOVEN, Alexandria.

Family **MONHYSTERIDÆ.**

185. *Monhystera capitata* SCHUURMANS STEKHOVEN, Mallorca.
186. *Monhystera microcephalon* SCHUURMANS STEKHOVEN, Mallorca.
187. *Theristus oxycerca* DE MAN, Camarque.

Family **SIPHONOLAIMIDÆ.**

188. *Siphonolaimus cylindricaudatus* SCHUURMAN STEKHOVEN, Camarque.

Family **SPHÆROLAIMIDÆ.**

189. *Sphærolaimus gracilis* DE MAN, Camarque.

Order ANGUILLULOIDEA.

Family **RHABDITIDÆ.**

190. *Rhabditis monhystera* BUETSCHLI, Alexandria.

Order DESMOSCOLECIDA.

Family **DESMOSCOLECIDÆ.**

191. *Tricoma nematoides* (GREEFF), Mallorca.
192. *Tricoma septuaginta* SCHUURMANS STEKHOVEN, Mallorca.

Moreover some other species of doubtful position and systematic affinity are known from this region, which, like the foregoing summary as well as the present study shows is particularly rich in forms.

From a zoogeographical point of view, the nemic fauna of the Mediterranean shows no peculiar resemblance to the nemic fauna of both Baltic and North Sea. Up to 1935, at the moment SCHUURMANS STEKHOVEN published his summary on the freeliving nematodes of North Sea and Baltic, these seas had only 27 species in common with the Mediterranean. Since then this number has risen to 41, that is on the 190 species, known up to this date from the mediterranean 24,5 % and 13,6 % from the 299 species known in 1935 from North Sea and Baltic. That means, that although we may take into consideration that our knowledge about the Nematodes of North Sea and Baltic has been enlarged in different ways, so as by the newer monograph of ALLGÉN (1935) on the Nematodes of the Oeresund, smaller papers of the same author on several localities of the Coast of Norway, as well as by the third Monograph of SCHUURMANS STEKHOVEN (1935) on freeliving Nematodes of the Belgian Coast, the percentage of forms, which North Sea and Baltic at one side and the Mediteranean at the other side have in common remains small and is inconsiderable in comparison with the forms found either exclusively in that sea, or in that

sea and in the seas, adjacent or neighbouring to the Mediterranean, like the Black Sea, the Sea of Azov, the Sea of Marmora and the Red Sea. We have also to think at intruders from the Coast of North Africa as valuable elements which might have contributed to the composition of the nemic fauna in the Mediterranean.

A clear insight in the composition of the nemic fauna of the Meditteranean will not be possible before more is known about the nemic fauna of the Atlantic Coast from Portugal and Spain and about the North Coast of Africa.

After having treated the nemic fauna of the Bay of Villefranche and Lilong I hope to come back on the geographical aspect of that fauna. To begin with I may point to the fact, that the biocoenoses, although rich in forms, a well-known fact, known to all who have made studies on that field in the Mediterranean, had a very low nemic index, opposite what has allways been emphasized by FILIPJEV (1918-1921) and ALLGÉN (1933-1935), who repeatedly have stated, that the Amphioxus-ground is a rich breeding-ground for nemas.

In Villefranche and Lilong the following species have been found. Those that are new for the Mediterranean are marked with an asterisk.

Order ENOPLOIDEA.

Family **LEPTOSOMATIDÆ.**

1. *Leptosomatum bacillatum* EBERTH.
2. *Thoracostoma steineri* MICOLETZKY.
3. *Anticoma pellucida* BASTIAN.
*4. *Anticoma insulæ-albæ* FILIPJEV.
5. *Anticoma acuminata* (EBERTH).
*6. *Stenolaimus paralepturus* n. sp.
*7. *Stenolaimus metagracilis* n. sp.
*8. *Stenolaimus brevicauda* n. sp.
9. *Halalaimus gracilis* DE MAN.
*10. *Trefusia longispiculosa* BRESSLAU et SCHUURMANS STEKHOVEN.

Family **PHANODERMATIDÆ.**

11. *Phanoderma ditlevseni* FILIPJEV.
*12. *Phanoderma nasutum* n. sp.
13. *Phanoderma laticolle* (MARION).
*14. *Phanoderma parasiticum* DITLEVSEN.
*15. *Phanoderma elegans* n. sp.
*16. *Galeonema longicauda* n. sp.

Famiy **ENOPLIDÆ.**

17. *Enoplus meridionalis* STEINER.
*18. *Mesacanthion tricuspis* n. sp.
19. *Enoploides amphioxi* FILIPJEV.
20. *Oxyonchus dubius* FILIPJEV.

Family **DORYLAIMIDÆ.**

21. *Dolicholaimus nudus* SCHUURMANS STEKHOVEN.
*22. *Anoncholaimus rhopalurus* n. sp.
23. *Oncholaimus dujardini* DE MAN.
24. *Oncholaimellus mediterraneus* SCHUURMANS STEKHOVEN.
*25. *Filipjevia mediterranea* n. sp.
26. *Metoncholaimus pristiurus* (zur STRASSEN).
27. *Metoncholaimus demani* (zur STRASSEN).
28. *Prooncholaimus mediterraneus* n. sp.
29. *Viscosia glabra* DE MAN.
*30. *Viscosia elongata* FILIPJEV.
*31. *Viscosia brachylaima* FILIPJEV.
32. *Viscosia macrorhopalocera* KREIS.
33. *Mononcholaimus elegans* KREIS.

Family **ENCHELIDIIDÆ.**

*34. *Bolbella hexabulba* FILIPJEV.
*35. *Pareurystomatina tenuicaudata* n. sp.
36. *Eurystomatina ornatum* (EBERTH).
*37. *Eurystomatina stenolaimum* n. sp.
*38. *Symplocostomella mediterranea* n. sp.
39. *Enchelidium acuminatum* EBERTH.
*40. *Enchelidium longicolle* FILIPJEV.
41. *Enchilidium pauli* (MARION).
42. *Catalaimus eberthi* (DE MAN).
*43. *Symplocostoma paratenuicolle* SCHUURMANS STEKHOVEN.
*44. *Symplocostoma filicauda* n. sp.
*45. *Symplocostoma longicolle* BASTIAN.
*46. *Symplocostoma longiseta* n. sp.

Order CYATHOLAIMOIDEA.

Family **CYATHOLAIMIDÆ.**

*47. *Longicyatholaimus filicaudatus* n. sp.
*48. *Longicyatholaimus effilatus* n. sp.
*49. *Metachoniolaimus pustulosus* n. sp.

*50. *Metachoniolaimus cylindribucca* n. sp.
*51. *Paralongicyatholaimus mastigodes* n. sp.
*52. *Cyatholaimus paucispira* n. sp.
*53. *Cyatholaimus chitwoodi* n. sp.
*54. *Paraseuratiella breviseta* n. sp.
*55. *Praeacanthonchus micoletzkyi* n. sp.
*56. *Praeacanthonchus angulatus* n. sp.
*57. *Praeacanthonchus uniformis* n. sp.
*58. *Paracanthonchus filipjevi* MICOLETZKY.

Family **CHOANOLAIMIDÆ.**

*59. *Cobbionema cylindrolaimoides* n. sp.
*60. *Cheironchus macramphis* n. sp.
*61. *Trogolaimus micramphis* n. sp.
62. *Halichoanolaimus filicauda* FILIPJEV, Banyuls.

Family **DESMODORIDÆ.**

63. *Desmodora pontica* FILIPJEV.
*64. *Desmodora macramphis* n. sp.
*65. *Desmodora coniseta* n. sp.
*66. *Paradesmodora cephalata* n. sp.
67. *Heterodesmodora ditlevseni* MICOLETZKY.
68. *Acanthopharynx peramata* (MARION).
*69. *Acanthopharynx rigida* n. sp.
*70. *Acanthopharynx seticauda* n. sp.
*71. *Croconema longiseta* n. sp.
*72. *Spirina rouvillei* n. sp.
*73. *Chromaspirina paucispira* n. sp.
*74. *Metachromadora longilaima* n. sp.
*75. *Metachromadora papillata* n. sp.

Family **MONOPOSTHIIDÆ.**

*76. *Monoposthia mediterranea* n. sp.

Family **RICHTERSIIDÆ.**

*77. *Richtersia elongata* n. sp.

Family **CHROMADORIDÆ.**

78. *Spilophorella euxina* FILIPJEV.
79. *Spilophorella mediterranea* (MICOLETZKY).
*80. *Euchromadora africana* VON LINSTOW, further Teneriffe.
*81. *Euchromadora inflatispiculum* n. sp.
82. *Hypodontolaimus ponticus* FILIPJEV.
*83. *Dichromadora tenuicauda* n. sp.
*84. *Dichromadora punctata* n. sp.
*85. *Prochromadorella brachyura* n. sp.
*86. *Trichromadora ophiocephala* n. sp.

Family **COMESOMIDÆ.**

*87. *Dorylaimopsis punctatus* DITLEVSEN.
*88. *Paracomesoma coronata* n. sp.
*89. *Comesoma punctata* n. sp.
90. *Sabatieria hilarula* DE MAN.
*91. *Sabatieria longicaudata* FILIPJEV.
*92. *Sabatieria abyssalis* FILIPJEV.
*93. *Sabatieria clavicauda* FILIPJEV.
*94. *Sabatieria rugosa* n. sp.
*95. *Sabatieria effilata* n. sp.

Order ARÆOLAIMOIDEA.

Family **DIPLOPELTIDÆ.**

*96. *Diplopeltis cirrhatus* (EBERTH).

Family **AXONOLAIMIDÆ.**

97. *Aræolaimus bioculatus* (DE MAN).
*98. *Aræeolaimoides demani* n. sp.
*99. *Axonolaimus arcuatus* n. sp.
*100. *Axonolaimus ponticus* FILIPJEV.
101. *Axonolaimus* spec.
*102. *Odontophora quadristicha* n. sp.
*103. *Odontophora breviseta* n. sp.
*104. *Odontophora angustilaima* (FILIPJEV).

Family **HALAPHANOLAIMIDÆ.**

*105. *Southernia elongata* n. sp.

Family **TRIPYLOIDIDÆ.**

*106. *Rhabdocoma brevicauda* n. sp.
*107. *Rhabdocoma cylindricauda* n. sp.
*108. *Paratripyloides longicauda* n. sp.

Order MONHYSTEROIDEA.

Family **LINHOMOEIDÆ.**

*109. *Metalinhomœus breviseta* n. sp.
*110. *Metalinhomœus cylindricauda* n. sp.
*111. *Metalinhomœus attenuatus* n. sp.
112. *Metalinhomœus effilatus* SCHUURMANS STEKHOVEN.
*113. *Metalinhomœus obtusicaudatus* (DE MAN).
*114. *Metalinhomœus pilosus* n. sp.
*115. *Paralinhomœus elongatus* n. sp.
*116. *Paralinhomœus clavicaudatus* n. sp.
117. *Paralinhomœus ostreurum* FILIPJEV.
*118. *Paralinhomœus brevicaudatus* n. sp.
*119. *Paralinhomœus brevibucca* n. sp.
*120. *Perilinhomœus longisetosus* n. sp.
*121. *Parachromogasteriella conicauda* n. sp.
*122. *Terschellingia heteroseta* n. sp.
*123. *Terschellingia antonovi* FILIPJEV.
*124. *Eleutherolaimus duplicatus* n. sp.
*125. *Omicronema truncatum* n. sp.

Family **SPHAEROLAIMIDÆ.**

*126. *Sphærolaimus dispar* FILIPJEV.
*127. *Sphærolaimus macrocirculus* FILIPJEV.

Family **SIPHONOLAIMIDÆ.**

128. *Siphonolaimus weissmanni* (zur STRASSEN).

Family **MONHYSTERIDÆ.**

129. *Paramonhystera paranormandica* (MICOLETZKY).
*130. *Paramonhystera elliptica* FILIPJEV.
*131. *Paramonhystera micramphis* n. sp.
*132. *Theristus mæoticus* FILIPJEV.
*133. *Theristus tenuispiculum* DITLEVSEN.
134. *Theristus normandicus* (DE MAN), Banyuls.
*135. *Theristus longicaudatus* FILIPJEV.
*136. *Theristus calcaneus* n. sp.
*137. *Theristus angulatus* n. sp.
*138. *Theristus stichotricha* n. sp.
*139. *Theristus obtusicephalatus* n. sp.
*140. *Metadesmolaimus coronatus* n. sp.
*141. *Monhystera gracilicauda* n. sp.
*142. *Monhystera heterolaima* n. sp.
*143. *Monhystera tenuis* n. sp.
*144. *Linhomœlla tenuicauda* n. sp.

Of these 143 species 106 are new for the Mediterranean, so that the number of species, known from that Sea amounts to 297 species, indeed a very rich output compare further page 23.

The Mediterranean has delivered us some new data about species formerly found in the North Sea and Baltic only. The said species are the numbers 1, 3, 10, 14, 36, 45, 87, 90, 91, 134 from the list, beginning on page 9.

In total the Mediterranean has now 51 species in common with the North Sea and Baltic, that is on the 299 species known in 1935 from North Sea and Baltic, no more than 17,1 %. One should however not forget that the number of species known from North Sea and Baltic has increased considerably by the researches of ALLGÉN so that we may be rather sure that the percentage of forms the North Sea and Baltic have in common with the Mediterranean, lays not over 15 % of the species occurring in that region.

Like mentioned above the percentage the Black Sea has in common with the Mediterranean is considerably greater than that which the North Sea and Baltic have in common with the Mediterranean.

If I speak of percentages this percentage should be taken on the whole fauna of the Black Sea. Up to this moment we do know from the Black Sea, the Sea of Azov and the Sea of Marmara, which may be considered as a zoogeographical unit not less than 147 species. From these 147 species 23 occur in the Sea of Marmara, which as far as our knowledge reaches has only 2 species in common with the Black Sea : *Euchromadora striata* (EBERTH) and *Oncholaimus dujardini* DE MAN. From the Black Sea proper FILIPJEV (1918, 1921, 1922) has described 115 species, whereas he enumerates for the Sea of Azov 15 species, of which 4 are likewise found in the Black Sea. These 4 mean so much that the Sea of Azov has 26,6 % of its nemic fauna in common with the Black Sea.

If we take the 147 species of the Sea of Marmara, the Black Sea and the Sea of Azov together and compare this fauna with the nemic fauna of the Mediterranean we get the following data.

From the 23 species found to occur in the Sea of Marmara, this Sea has 15 species in common with the Mediterranean, i.e. not less than 65 %. If we take the Black Sea proper we find that from the 115 species found till so far

in the Black Sea proper 34 occur likewise in the Mediterranean or 29,5 % of the Black Sea nemic fauna. From the Sea of Azov with its 15 species we know that 5 or 33,3 % occur likewise in the Mediterranean.

Do we take the three Seas together than we get on a total of 147 species this region possesses 51 species or 34,7 % occuring likewise in the Mediterranean. It is clear I think that the Mediterranean shows greater affinities with the Black Sea, the Sea of Marmara and the Sea of Azov than with more northern European Seas. It forms a zoogeographical territory in itself, receiving species from neighbouring seas. On which way this occurs cannot be stated with certainty. I suppose that traffic plays an important role in the distribution of the concerned nematodes. Ships may transport together with many eponts, that generally are growing on their skin, nematodes too and so we may easily explain why the Mediterranean has so many forms in common with the mentioned seas. Floating algae may also serve the same purpose.

From the foregoing data may be concluded, that the Black Sea Fauna represents an empoverished Mediterranean Fauna. The explanation for this phenomenon lays at hand. It is found, that the Black Sea with its comparatively great depths has a rather high salinity in its deeper layers. On these layers of high salinities the effluents of the rivers, flowing in the Black Sea build sheets of lower salinity. The hydrological circumstances are in the Black Sea as a whole I think less favourable for the development of a rich fauna than elsewhere, certainly less favourable than in the Mediterranean. So it is no wonder that the nemic fauna too is poor in comparison with that of the Mediterranean. The Black Sea is a place of selection for those species, that can live in rather high salinities. I suppose the reverse takes place in that region of what we find for instance in the former Zuidersea with its low salinity. Here we likewise encounter an empoverished marine nemic fauna. Its components partly are recruted from the high Sea, being euryhaline forms, that can withstand a rather high dilution of the seawater, partly typical forms of brackish water and brackish soil. That habitat has likewise made a selection but on the other side of the scale. In both cases we have to do with an inland sea, in the case of the Zuidersea with an inland sea of low in the case of the Black Sea and the Sea of Azov with an inland sea with at least partly high salinities. Both circumstances result in the empoverishment of the inhabiting fauna.

To get a concise idea about the forms the Sea of Marmara, the Black Sea as well as the Sea of Azov have in common with the Mediterranean I will summarize the mentioned forms in the following Tables.

TABLE 1.

Species the Mediterranean has in common with the Sea of Marmara.
Number of species known from that Sea : 23.

1. *Anticoma acuminata* (EBERTH).
2. *Halalaimus gracilis* DE MAN.
3. *Enoplus hirtus* MARION.
4. *Oncholaimus dujardini* DE MAN.
5. *Metoncholaimus pristiurus* (zur STRASSEN).
6. *Symplocostoma ponticum* FILIPJEV.
7. *Cyatholaimus gracilis* (EBERTH).
8. *Acanthopharynx micans* (MARION).
9. *Euchromadora striata* (EBERTH).
10. *Chromadorina læta* (DE MAN).
11. *Dichromadora parapœcilosoma* (MICOLETZKY).
12. *Arœolaimus mediterraneus* (DE MAN).
13. *Metalinhomœus obtusicaudatus* (DE MAN).
14. *Paramonhystera paranormandica* (MICOLETZKY).
15. *Theristus normandicus* DE MAN.

TABLE 2.

Species the Black Sea has in common with the Mediterranean.
Total of species known from the Black Sea : 115.

1. *Leptosomatum bacillatum* (EBERTH).
2. *Enoplus littoralis* FILIPJEV.
3. *Enoploides amphioxi* FILIPJEV.
4. *Oxyonchus dubius* FILIPJEV.
5. *Oncholaimus brevicaudatus* FILIPJEV.
6. *Oncholaimus dujardini* DE MAN.
7. *Metoncholaimus demani* (zur STRASSEN).
8. *Bolbella hexabulba* (FILIPJEV).
9. *Enchelidium longicolle* FILIPJEV.
10. *Enchelidium pauli* (MARION).
11. *Symplocostoma longicolle* BASTIAN.
12. *Symplocostoma ponticum* FILIPJEV.
13. *Eurystomatina assimile* (DE MAN).
14. *Cyatholaimus demani* FILIPJEV.
15. *Paracanthonchus filipjevi* MICOLETZKY.
16. *Halichoanolaimus filicauda* FILIPJEV.
17. *Desmodora pontica* FILIPJEV.
18. *Chromadorina gracilis* FILIPJEV.
19. *Spilophorella euxina* FILIPJEV.
20. *Hypodontolaimus ponticus* FILIPJEV.
21. *Euchromadora striata* (EBERTH).
22. *Sabatieria longicaudata* FILIPJEV.
22. *Sabatieria abyssalis* (FILIPJEV).
24. *Sabatieria clavicauda* (FILIPJEV).
25. *Diploppeltis cirrhatus* (EBERTH).
26. *Axonolaimus ponticus* FILIPJEV.
27. *Odontophora angustilaima* (FILIPJEV).
28. *Pselionema annulatum* (FILIPJEV).
29. *Tripyloides demani* FILIPJEV.
30. *Paralinhomœus ostrearum* FILIPJEV.
31. *Paramonhystera elliptica* FILIPJEV.
32. *Theristus longicaudatus* FILIPJEV.
33. *Sphærolaimus dispar* FILIPJEV.
34. *Sphærolaimus macrocirculus* FILIPJEV.

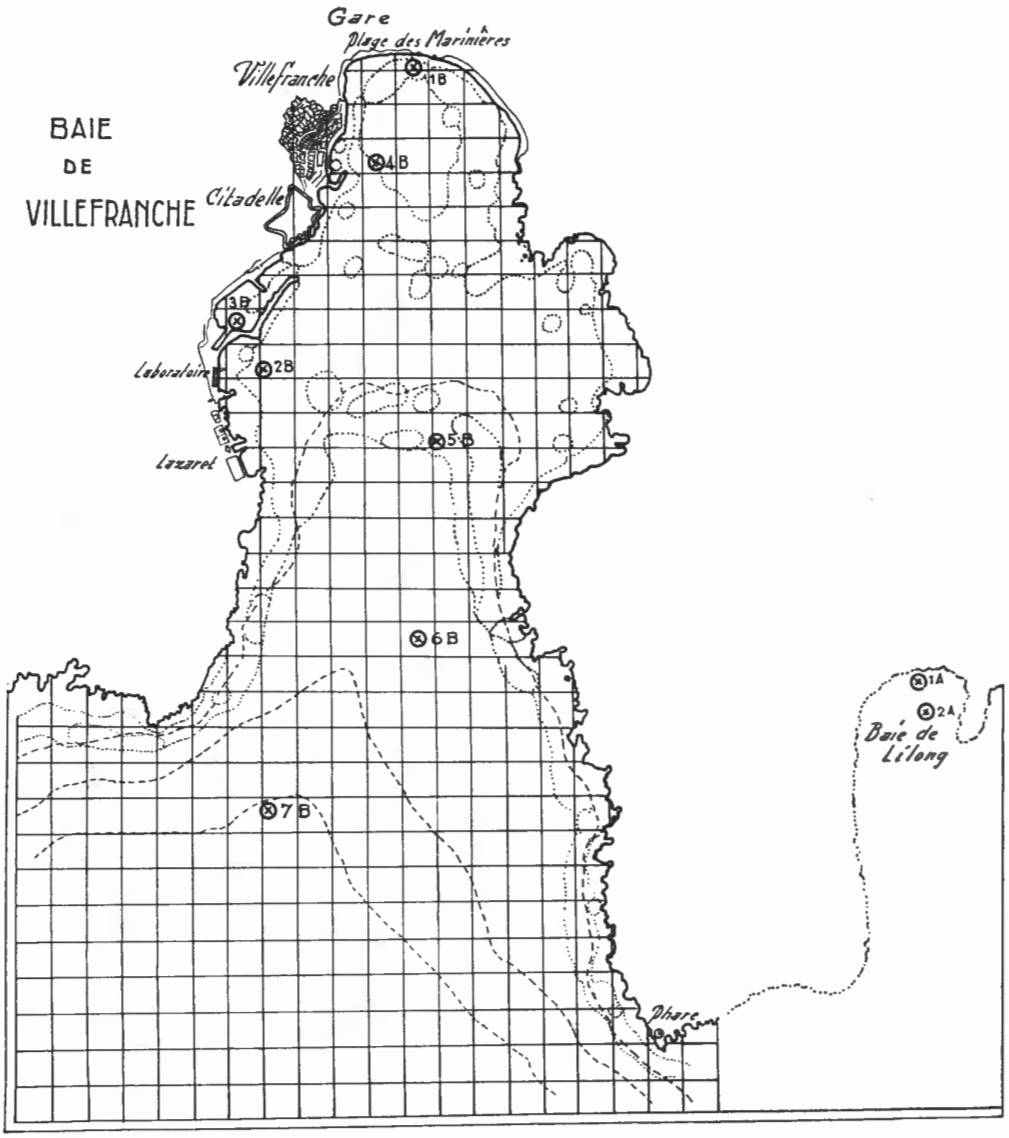
TABLE 3.

Species the Sea of Azov has in common with the Mediterranean.
Total of the species found in the Sea of Azov : 15.

1. *Enoplus littoralis* FILIPJEV.
2. *Viscosia glabra* (BASTIAN).
3. *Anoplostoma viviparum* (BASTIAN).
4 *Terschellingia antonovi* FILIPJEV.
5. *Theristus mæoticus* FILIPJEV.

Undoubtedly future researches will prove that the mentioned seas show an even greater similarity in their composition than the present study has brought to light. We stay so to say at the beginning of the exploration of the nemic fauna of the Mediterranean with its adjacent seas. The general trend of the results of these future researches will however remain the same.

Now I come to the composition of the nemic fauna at the various habitats near Villefranche and in the Bay of Lilong.



Map of the Bay of Villefranche (Stations 1 B-7 B) and the Bay of Lilong (Stations 1 A-2 A).

Sample 1 A. « Baie de Lilong », coarse sand, depth 3 m, quantity 94 cc, 82 nematodes, 10 species, nemic index 0,87.

SPECIES	♂	%	♀	%	Juv.	Total	% of total
1. *Metoncholaimus demani* (ZUR STRASSEN).	8	66	4	33	61	73	89
2. *Galeonema longicauda* n. sp.	—	—	—	—	1	1	1,22
3. *Oxyonchus dubius* FILIPJEV	—	—	1	—	—	1	1,22
4. *Dolicholaimus nudus* SCHUURMANS STEKHOVEN	—	—	1	—	—	1	1,22
5. *Oncholaimus dujardini* DE MAN	—	—	—	—	1	1	1,22
6. *Cyatholaimus paucispira* n. sp.	—	—	1	—	—	1	1,22
7. *Spirina rouvillei* n. sp.	—	—	1	—	—	1	1,22
8. *Paracomesoma coronata* n. sp.	—	—	—	—	1	1	1,22
9. *Hypodontolaimus ponticus* FILIPJEV	—	—	1	—	—	1	1,22
10. *Viscosia brachylaima* FILIPJEV	—	—	—	—	1	1	1,22

Metoncholaimus demani is by far the leading species. The nemic index in itself is low. Apparently this kind of habitat is no good breeding ground for nemas. In the Zuidersea media with coarse sand often did harbour a comparatively large number of species, but the number of each species was very low, a parallel to what we find here. *Metoncholaimus demani* is known to feed on Synascidia. We have no certainly if it feeds on other nematodes, but should this be the case, it would give an explanation for the predominance of the species, compare likewise sample 1 B.

Sample 2 A. « Baie de Lilong », coarse sand, with shells, depth 5 m, quantity of material 140 cc, 73 nematodes, 23 species, nemic index 0,52, therefore very low.

SPECIES	♂	%	♀	%	Juv.	Total	% of total
1. *Euchromadora africana* VON LINSTOW	4	36.3	7	63,7	3	14	19,1
2. *Anticoma acuminata* (EBERTH)	5	45,4	6	54,6	2	13	17,8
3. *Viscosia glabra* (BASTIAN)	—	—	7	—	4	11	15
4. *Paramonhystera paranormandica* (MIC.).	2	66	1	33	1	4	5,4
5. *Acanthopharynx micans* MARION	—	—	4	—	—	4	5,4
6. *Prooncholaimus mediterraneus* n. sp.	—	—	1	—	2	3	4,1
7. *Symplocostoma longicolle* BASTIAN	—	—	1	—	1	2	2,7
8. *Præacanthonchus uniformis* n. sp.	1	50	1	50	—	2	2,7
9. *Præacanthonchus fiflifpjevi* MICOLETZKY.	—	—	1	—	1	2	2,7
10. *Spilophorella euxina* FILIPJEV	1	50	1	50	—	2	2,7
11. *Dichromadora tenuicaudata* n. sp.	1	—	1	50	—	2	2,7
12. *Draconema ponticum* FILIPJEV	—	—	1	—	1	2	2,7
13. *Hypodontolaimus ponticus* FILIPJEV	—	—	2	—	—	2	2,7
14. *Halalaimus gracilis* DE MAN	—	—	1	—	—	1	1,35
15. *Phanoderma elegans* n. sp.	—	—	1	—	—	1	1,35
16. *Eurystomatina stenolaimum* n. sp.	—	—	—	—	—	1	1,35
17. *Enchelidium longicolle* FILIPJEV	—	—	—	—	1	1	1,35
18. *Catalaimus eberthi* (DE MAN)	1	—	—	—	—	1	1,35
19. *Symplocostoma paratenuicolle* n. sp.	—	—	1	—	—	1	1,35
20. *Arœolaimoides demani* n. sp.	—	—	1	—	—	1	1,35
21. *Thoracostoma steineri* MICOLETZKY	—	—	—	—	1	1	1,35
22. *Desmodora pontica* FILIPJEV	—	—	1	—	—	1	1,35
23. *Theristus mæoticus* FILIPJEV	1	—	—	—	—	1	1,35
	Total number of specimens : 73						

When compared with sample 1 A it becomes at once clear that none of the 23 species occupies a dominating position. I have the impression that we have here to do with a phenomenon often observed in the Zuidersea, that on certain spots, where the bottom consists of coarse sand, and the medium does not afford optimal conditions for the development of a rich nemic fauna, where thirdly flood and ebb are felt, many species are swept together from their original breeding ground and now hide in the bottom, being sieved out by the fine openings the sand presents.

In such cases, like in the present case, the majority of the species is represented by single specimens, whereas there is a disproportion between adults and juveniles. In the same habitat I found Cumaceae, foraminifers, shells. Among the first three species, which together form the majority of the nemic biocoenosis *Anticoma* is an epont, frequently occurring an hydroids.

Sample 1 B. Villefranche « Plage des Marinières », under Vegetation of ***Posidonia***, depth 3 m, *Amphioxus* sand, coarse sand. Quantity of material 70 cc, 55 nematodes, 22 species, nemic index 0,78, therefore rather low.

SPECIES	♂	%	♀	%	Juv.	Total	% of total
1. *Oncholaimus dujardini* De Man	4	57,1	3	42,9	4	1	20
2. *Anticoma acuminata* (Eberth)	—	—	2	—	4	6	10,9
3. *Enoplus meridionalis* Steiner	2	40	3	60	1	6	10,9
4. *Metalinhomœus obtusicaudatus* (De Man).	1	33	2	66	2	5	9
5. *Leptosomatum bacillatum* (Eberth)	—	—	—	—	3	3	5,4
6. *Viscosia glabra* (Bastian)	—	—	3	—	—	3	5,4
7. *Thoracostoma steineri* Micoletzky	1	—	—	—	1	2	3,6
8. *Phanoderma ditlevseni* Filipjev	2	—	—	—	—	2	3,6
9. *Enchelidium acuminatum* (Eberth)	1	—	—	—	1	2	3,6
10. *Enchelidium longicolle* Filipjev	—	—	—	—	2	2	3,6
11. *Heterodesmodora ditlevseni* Micoletzky.	—	—	2	—	—	2	3,6
12. *Stenolaimus paralepturus* n. sp.	—	—	1	—	—	1	1,8
13. *Stenolaimus brevicaudatus* n. sp.	—	—	1	—	—	1	1,8
14. *Phanoderma nasutum* n. sp.	—	—	1	—	—	1	1,8
15. *Phanoderma laticolle* (Marion)	—	—	—	—	1	1	1,8
16. *Enchelidium pauli* (Marion)	—	—	1	—	—	1	1,8
17. *Præacanthonchus micoletzkyi* n. sp.	1	—	—	—	—	1	1,8
18. *Acanthopharynx rigida* n. sp.	1	—	—	—	—	1	1,8
19. *Diplopeltis cirrhatus* (Eberth)	1	—	—	—	—	1	1,8
20. *Axonolaimus* species	—	—	1	—	—	1	1,8
21. *Paralinhomœus clavicaudatus* n. sp.	—	—	1	—	—	1	1,8
22. *Euchromadora striata* (Eberth)	1	—	—	—	—	1	1,8
				Total number : 55			

In the same biocoenosis I found *Amphioxus*, annelids. anisopods, isopods. The composition of the nemic fauna greatly resembles that of sample 2 A. It shows clearly that the coarse *Amphioxus*sand, considered at the same time the low nemic index and the great number of forms, the majority of which is only represented by a single or a few specimens, not necessarily is a rich breeding place for Nematodes. *Enoplus* and *Anticoma* often are found as eponts in

colonies of Hydroids. They apparently likewise may live in the biocoenosis of *Posidonia*. From *Oncholaimus dujardini* we known that it feeds on colonies of *Zoobothryon* and eventually too on other Synascidia. Thus the main representants of the sample give an indication of the kind of biocoenosis they live in and upon.

Sample 2 B. Taken off the Station, coarse sand under vegetation of *Posidonia*, depth 15 m. Quantity of material 60 cc, 23 nematodes, 14 species, nemic index 0,38, very low.

SPECIES	♂	%	♀	%	Juv.	Total	% of total
1. *Desmodora macramphis* n. sp.	—	—	3	—	1	3	13
2. *Theristus mæoticus* FILIPJEV	1	50	1	50	—	3	13
3. *Euchromadora striata* (EBERTH)	2	66	1	33	—	3	13
4. *Enoplus meridionalis* STEINER	1	50	1	50	—	2	8,7
5. *Comesoma punctata* n. sp.	—	—	2	—	—	2	8,7
6. *Metadesmolaimus coronatus* n. sp.	1	50	1	50	—	2	8,7
7. *Cheironchus macramphis* n. sp.	1	—	1	—	—	1	4,3
8. *Paradesmodora cephalata* n. sp.	—	—	1	—	—	1	4,3
9. *Spirina rouvillei* n. sp.	—	—	1	—	—	1	4,3
10. *Monoposthia mediterranea* n. sp.	—	—	—	—	—	1	4,3
11. *Dichromadora punctata* n. sp.	1	—	—	—	—	1	4,3
12. *Sabatieria rugosa* n. sp.	1	—	—	—	—	1	4,3
13. *Metalinhomœus pilosus* n. sp.	—	—	1	—	—	1	4,3
14. *Paralinhomœus brevicaudatus* n. sp. ...	—	—	—	—	1	1	4,3

We have here before us a similar biocoenosis as that of sample 1 B, although its composition is different. There is no domination at all of one of the components and the great many species of which we find some few specimens only indicate that the habitat is no favourable breeding ground for nemas, Juveniles are almost totally absent. That speaks likewise against a thrifty life of the nematodes in question.

Sample 3 B. Black mud and organic detritus, further end of the « Port de la Darse »; depth 3 m, 33 nematodes, 26 species. Quantity of mud 160 cc, nemic index 2,06 the highest nemic index found at all near Villefranche.

SPECIES	♂	%	♀	%	Juv.	Total	% of total
1. *Comesoma coronata* n. sp.	26	51	25	49	78	129	39
2. *Terschellingia antonovi* FILIPJEV	17	29,8	40	71,2	23	80	24,2
3. *Sabatieria clavicauda* n. sp.	5	41,6	7	58,4	10	22	6,6
4. *Theristus normandicus* (DE MAN)	—	—	5	—	11	16	4,8
5. *Metalinhomœus breviseta* n. sp.	3	33	6	66	10	19	5,6
6. *Longicyatholaimus effilatus* n. sp.	2	22,2	7	77,8	1	10	2,9
7. *Sabatieria longicaudata* FILIPJEV	3	75	1	25	3	7	2,1
8. *Theristus angulatus* n. sp.	6	85,8	1	14,2	—	7	2,1
9. *Metoncholaimus pristiurus* ZUR STRASSEN.	1	50	1	50	4	6	1,8
10. *Anticoma insulæ-albæ* FILIPJEV	1	33,3	2	66,6	2	5	1,43
11. *Oncholaimellus mediterraneus* SCHUURMANS STEKHOVEN	1	50	1	50	2	5	1,43
12. *Viscosia glabra* (BASTIAN)	3	75	1	25	1	5	1,43
13. *Hypodontolaimus ponticus* FILIPJEV	1	25	3	75	—	4	1,2
14. *Mononcholaimus elegans* KREIS	—	—	—	—	3	3	0,9
15. *Metalinhomœus cylindricauda* n. sp.	2	—	—	—	1	3	0,9
16. *Monhystera gracilicauda* n. sp.	—	—	—	—	2	2	0,6
17. *Cheironchus macramphis* n. sp.	—	—	—	—	2	2	0,6
18. *Viscosia elongata* FILIPJEV	1	—	—	—	—	1	0,3
19. *Acanthopharynx seticauda* n. sp.	1	—	—	—	—	1	0,3
20. *Trichromadora ophiocephala* n. sp.	—	—	1	—	—	1	0,3
21. *Metalinhomœus effilatus* SCHUURMANS STEKHOVEN	—	—	1	—	—	1	0,3
22. *Paralinhomœs elongatus* n. sp.	—	—	—	—	1	1	0,3
23. *Theristus calcaneus* n. sp.	1	—	—	—	—	1	0,3
24. *Metalinhomœus obtusicaudatus* FILIPJEV.	—	—	—	—	1	1	0,3
25. *Halichoanolaimus filicauda* FILIPJEV	—	—	1	—	—	1	0,3
26. *Desmodora macramphis* n. sp.	—	—	—	—	1	1	0,3
					Total : 334 specimens		

The material is a mixture of mud and sand. Stones are intermixed with it. It presents ferrireduction. The black colour indicates that we have to do with ferrosulfurous mud, which is almost deprived of oxygen. Here we get quite another picture of the development of the nemic fauna. In the present case we are able to speak of a thrifty nemic fauna, rich in species as well as in individuals and characterized by a significant reproductive activity of the leading forms. The presence of a great quantity of organic detritus is responsible for that phenomenon, for we know, that many species of nematodes feed on particles, bacteria, as well as detritus, that is small enough to pass the oral aperture of the animals in question. COBB has shown at earlier occasion that the bulk of the nematodes lives in the upper 10 mm of the bottom mud. The density of the nematode population, which was over 2 per cc and was the highest found near Villefranche, remains however small and inconspicuous in comparison with the nemic population formerly found by the writer in the Zuidersea, where at some spots 400-600 nematodes per cc were collected. Compared with these localities even the richest nematode biocoenosis near Villefranche remains poor. The present sample proves once more that it is

not the *Amphioxus*ground for itself that is a rich breeding ground for nemas, but mudcontaining bottom with a rich content of organic detritus that has to be considered as such.

Sample 4 B. Black mud and organic detritus, off « Vieux Villefranche ». Quantity of mud 150 cc, 156 nematodes, 21 species, nemic index 1,04, depth 20 m.

SPECIES	♂	%	♀	%	Juv.	Total	% of total
1. *Croconema longiseta* n. sp.	16	47	18	53	12	46	28,8
2. *Sabatieria clavicauda* FILIPJEV	16	66	8	33	11	35	22,4
3. *Terschellingia antonovi* FILIPJEV	8	47	9	53	11	28	17,8
4. *Paracomesoma coronata* n. sp.	4	57,1	3	42,9	2	9	5,7
5. *Desmodora macramphis* n. sp.	3	75	1	25	3	7	4,4
6. *Metoncholaimus pristiurus* ZUR STRASSEN.	1	50	1	50	3	5	3,2
7. *Odontophora quadristicha* n. sp.	2	66	1	33	—	3	1,9
8. *Paramonhystera elliptica* FILIPJEV	—	—	2	—	1	3	1,9
9. *Monhystera heterolaima* n. sp.	—	—	3	—	—	3	1,9
10. *Viscosia glabra* (BASTIAN)	2	66,6	1	33,3	—	3	1,9
11. *Anticoma pellucida* BASTIAN	—	—	1	—	1	2	1,27
12. *Symplocostoma longicolle* BASTIAN	—	—	1	—	1	2	1,27
13. *Præacanthonchus angulatus* n. sp.	1	—	—	—	1	2	1,27
14. *Theristus longicaudatus* FILIPJEV	2	—	—	—	—	2	1,27
15. *Anticoma acuminata* (EBERTH)	—	—	—	—	1	1	0,63
16. *Eurystomatina ornatum* (EBERTH)	—	—	1	—	—	1	0,63
17. *Euchromadora inflatispiculum* n. sp. ...	1	—	—	—	—	1	0,63
18. *Southernia elongata* n. sp.	—	—	—	—	1	1	0,63
19. *Metalinhomœus breviseta* n. sp.	1	—	—	—	—	1	0,63
20. *Paralinhomœus ostrearum* FILIPJEV	—	—	—	—	1	1	0,63
21. *Paralinhomœus longisetosus* n. sp.	—	—	—	—	1	1	
				Total number : 156			

The composition of the sample 4 B shows great resemblance with that of sample 3 B and is of the same type. The nemic index is somewhat lower and this may depend on the greater depth of the sea at this spot. The smaller quantity of available oxygen may play probably an important role in the density of the population and the rate of reproduction. But for the rest we get here as there some species which produce offspring and are at home in the given habitat. In the material I found Cumaceae as well as fibres.

Sample 5 B. Villefranche, between the « Lazareth » and « Anse passable », depth 50 m. Quantity of mud 112 cc, 26 nematodes, 42 species, nemic index 0,67. Consistence of mud : very fine, mixed with sand.

SPECIES	♂	%	♀	%	Juv.	Total	% of total
1. *Metachromadora longilaima* n. sp.	1	20	4	80	4	9	11,8
2. *Sabatieria hilarula* (BASTIAN)	2	50	2	50	1	5	6,5
3. *Stenolaimus paralepturus* n. sp.	1	50	1	50	2	4	5,2
4. *Paraseuratiella breviseta* n. sp.	1	35	2	66	—	3	3,8
5. *Halichoanolaimus filicauda* FILIPJEV ...	1	50	1	50	1	3	3,8
6. *Desmodora coniseta* n. sp.	1	—	—	—	2	3	3,8
7. *Dorylaimopsis punctatus* DITLEVSEN	2	—	—	—	1	3	3,8
8. *Terschellingia antonovi* FILIPJEV	—	—	3	—	—	3	3,8
9. *Sphærolaimus dispar* FILIPJEV	—	—	1	—	2	3	3,8
10. *Trefusia longispiculosa* BRESSLAU-S. S. ...	1	50	1	50	—	2	2,6
11. *Viscosia macrorhopalocera* KREIS	1	50	1	50	—	2	2,6
12. *Longicyatholaimus filicaudatus* n. sp. ...	—	—	2	—	—	2	2,6
13. *Desmodora macramphis* n. sp.	—	—	—	—	2	2	2,6
14. *Richtersia elongata* n. sp.	1	50	1	50	—	2	2,6
15. *Hypodontolaimus ponticus* FILIPJEV	1	50	1	50	—	2	2,6
16. *Siphonolaimus weissmanni* (Z. STRASSEN).	2	—	—	—	—	2	2,6
17. *Phanoderma parasiticum* DITLEVSEN	—	—	1	—	—	1	1,3
18. *Filipjevia mediterranea* n. sp.	—	—	—	—	1	1	1,3
19. *Bolbella hexabulba* (FILIPJEV)	—	—	1	—	—	1	1,3
20. *Symplocostomella mediterranea* n. sp. ...	—	—	1	—	—	1	1,3
21. *Symplocostoma filicauda* n. sp.	—	—	—	—	1	1	1,3
22. *Symplocostoma longiseta* n. sp.	—	—	—	—	1	1	1,3
23. *Metachoniolaimus pustulosus* n. sp.	—	—	1	—	—	1	1,3
24. *Chromaspirina paucispira* n. sp.	—	—	1	—	—	1	1,3
25. *Spilophorella mediterranea* (MICOLETZKY).	—	—	1	—	—	1	1,3
26. *Euchromadora inflatispiculum* n. sp. ...	—	—	1	—	—	1	1,3
27. *Prochromadorella brachyura* n. sp.	1	—	—	—	—	1	1,3
28. *Sabatieria clavicauda* FILIPJEV	—	—	1	—	—	1	1,3
29. *Sabatieria effilata* n. sp.	1	—	—	—	—	1	1,3
30. *Axonolaimus ponticus* FILIPJEV	—	—	—	—	1	1	1,3
31. *Odontophora breviseta* n. sp.	—	—	1	—	—	1	1,3
32. *Odontophora angustilaima* n. sp.	—	—	1	—	—	1	1,3
33. *Rhabdocoma brevicauda* n. sp.	1	—	—	—	—	1	1,3
34. *Paratripyloides longicauda* n. sp.	1	—	—	—	—	1	1,3
35. *Metalinhomœus attenuatus* n. sp.	—	—	1	—	—	1	1,3
36. *Eleutherolaimus duplicatus* n. sp.	—	—	—	—	1	1	1,3
37. *Theristus longicaudatus* FILIPJEV	—	—	1	—	—	1	1,3
38. *Theristus stichotricha* n. sp.	—	—	1	—	—	1	1,3
39. *Theristus obtusicephalus* n. sp.	—	—	1	—	—	1	1,3
40. *Monhystera tenuis* n. sp.	—	—	1	—	—	1	1,3
41. *Linhomœlla tenuicauda* n. sp.	—	—	1	—	—	1	1,3
42. *Cobbionema cylindrolaimoides* n. sp. ...	—	—	1	—	—	1	1,3

Although the habitat in question has given the largest output in species, we must consider the biocoenosis as a poor one. Let us put for instance the first three or 4 species together than they make out no more than at the utmost 27,3 % of the whole biocoenosis or no more than 23,5 % of the biocoenosis, if we take only the first 3 species together. One gets the impression, that the given habitat is no good breeding place. This fact becomes obvious if we compare sample 5 B with 4 B, where the first three species together make out 69 % of the biocoenosis and we therefore find, notwithstandig the fact, that the nemic index is comparitively low, an outstanding domination of some species, which may be considered as representative for the fauna at that locality.

In the present case it is hardly possible to speak of representative forms. Secondly the nemic index is low. This becomes easily explainable if we take in account the fact, that the consistence of the substrate is not very favourable for a thrifty biocoenosis. The quantity of mud is far in the minority in comparison with the sand, which is intermixed with the mud. That means that the quantity of food, which for the main part consists in fine organic detritus, is deficient.

Further I may point to the fact that *Sphærolaimus dispar* and *Halichoanolaimus dispar*, two nematodes of which we know that they prey on other nematodes together make out 7,6 % of the fauna, and although this as a whole is not dense, it may be a factor of some importance in checking the reproductivity of other forms.

Sample 6 B. Villefranche, off the « Pointe de la Gavinette », grey mud, depth 80 m. Quantity of material 116 cc, very fine mud, 128 nematodes, 35 species, nemic index 1,1.

SPECIES	♂	%	♀	%	Juv.	Total	% of total
1. *Dorylaimopsis punctatus* DITLEVSEN	5	35,6	9	64,4	12	26	20,3
2. *Sabatieria abyssalis* FILIPJEV	4	57,2	3	42,8	5	12	9,6
3. *Sabatieria hilarula* (BASTIAN)	7	63,7	4	36,3	—	11	8,5
4. *Hypodontolaimus ponticus* FILIPJEV	4	44,4	5	55,6	—	9	7
5. *Anticoma pellucida* (BASTIAN)	2	33,3	4	66,6	2	8	6,2
6. *Spilophorella euxina* FILIPJEV	4	57,2	3	42,8	—	7	5,4
7. *Sphærolaimus dispar* FILIPJEV	2	50	2	50	2	6	4,6
8. *Stenolaimus paralepturus* n. sp.	—	—	2	—	2	4	3,1
9. *Stenolaimus metagracilis* n. sp.	—	—	4	—	—	4	3,1
10. *Rhabdocoma cylindricauda* n. sp.	—	—	4	—	—	4	3,1
11. *Mesacanthion tricuspis* n. sp.	1	—	—	—	2	3	2,3
12. *Metachromadora longilaima* n. sp.	2	66,6	1	33,3	—	3	2,3
13. *Paramonhystera macramphis* n. sp. ...	—	—	2	—	1	3	2,3
14. *Pareurystomatina tenuicauda* n. sp.	1	50	1	50	—	2	1,5
15. *Paralongicyatholaimus mastigodes* n. sp.	—	—	2	—	—	2	1,5
16. *Cobbionema cylindrolaimoides* n. sp. ...	—	—	1	—	1	2	1,5
17. *Axonolaimus arcuatus* n. sp.	1	50	1	50	—	2	1,5
18. *Rhabdocoma brevicauda* n. sp.	1	50	1	50	—	2	1,5
19. *Theristus normandicus* (DE MAN)	—	—	1	—	1	2	1.5
20. *Enoploides amphioxi* FILIPJEV	—	—	1	—	—	1	0,7
21. *Anoncholaimus rhopalurus* n. sp.	—	—	1	—	—	1	0,7
22. *Viscosia brachylaima* FILIPJEV	1	—	—	—	—	1	0,7
23. *Cyatholaimus chitwoodi* n. sp.	—	—	1	—	—	1	0,7
24. *Trogolaimus macramphis* n. sp.	—	—	—	—	1	1	0,7
25. *Desmodora pontica* FILIPJEV	—	—	—	—	1	1	0,7
26. *Desmodora macramphis* n. sp.	—	—	—	—	1	1	0,7
27. *Metachromadora papillata* n. sp.	1	—	—	—	—	1	0,7
28. *Sabatieria clavicauda* FILIPJEV	—	—	1	—	—	1	0,7
29. *Paralinhomœus brevibucca* n. sp.	—	—	—	—	1	1	0,7
30. *Parachromogasteriella conicauda* n. sp.	—	—	1	—	—	1	0,7
31. *Terschellingia heteroseta* n. sp.	1	—	—	—	—	1	0,7
32. *Theristus tenuispiculum* DITLEVSEN	1	—	—	—	—	1	0,7
33. *Southernia elongata* n. sp.	—	—	—	—	1	1	0,7
34. *Halalaimus gracilis* DE MAN	—	—	1	—	—	1	0,7
35. *Siphonolaimus weissmanni* ZUR STRASSEN.	—	—	1	—	—	1	0,7
						Total number : 128	

It is a remarkable fact, that three Comesomidae occupy the three first places of the list. Now unfortunately the mode of feeding of these Comesomidae is not known. The only thing of importance is that *Dorylaimopsis punctatus* has protrusible teeth, so that we may suppose that these serve a carnivorous mode of feeding. This does not apply for *Sabatieria* however. For the rest the composition of the biocoenosis is similar to that of sample 4 B and 2 A, in which case we too have some species, that are present in a rather high percentage, forms, that do reproduce, without occupying a dominating place in the biocoenosis. Here again the biocoenosis is rich in forms without in itself being a rich breeding place, because the nemic population is not dense, confer the low nemic index.

Sample 7 B. Villefranche, entrance of the road, grey mud, depth 230 m, fine mud. Quantity 140 cc, 12 nematodes, nemic index 0,08.

SPECIES	♂	%	♀	%	Juv.	Total	% of total
1. *Sabatieria abyssalis* FILIPJEV	—	—	2	—	—	2	16,6
2. *Sabatieria clavicauda* FILIPJEV	—	—	2	—	—	2	16,6
3. *Theristus tenuispiculum* DITLEVSEN	1	—	—	—	1	2	16,6
4. *Mesacanthion tricuspis* n. sp.	—	—	—	—	1	1	8,3
5. *Metachoniolaimus cylindribucca* n. sp.	1	—	—	—	—	1	8,3
6. *Sabatieria hilarula* (BASTIAN)	—	—	1	—	—	1	8,3
7. *Sphærolaimus dispar* FILIPJEV	—	—	1	—	—	1	8,3
8. *Sphærolaimus macrocirculus* FILIPJEV ...	1	—	—	—	—	1	8,3
9. *Dorylaimopsis punctatus* DITLEVSEN	—	—	—	—	1	1	8,3
					Total : 12		

I further found Cumaceae at this spot.

There is no predominance in this biocoenosis. In its composition it is very alike the foregoing sample 6 B, only that it is much poorer in species and at the same time less dense. One gets the impression that with increasing depth the nemic index becomes lower and the nemic population less dense. The decomposition of fine organic detritus possibly has proceeded in higher water layers already so far, that only a comparatively small percentage of the original available quantity reaches the abyssal depths. So the greater depths like that of sample 7 B afford bad conditions for the production of a rich nematode population. This observation does not stay apart. I have made the same experience during the examination of the nematode material of the Snellius expedition (3). Here samples of mud from abyssal depths were

(3) This paper treating about 150, mostly new species will appear as a communication of the Leyden Museum of Natural History in Temminckia, to which it was presented in 1944.

available. Many of these were quite free from nematodes. In general the nemic index was small in the samples taken during that expedition. The majority of the nematodes captured during that expedition originated from low depths, almost without exception habitats from the littoral zones, in the coral shelves of the islands. In the same way we see in the neighbourhood of Villefranche that a more luxurious nemic fauna is found in the littoral zone. The nematodes found in greater depths like those found in sample 7 B are supposed to be transported to there from the littoral zone, therefore to a spot, which in itself is no good breeding place but where the nematodes in question are able to prolong their life for a certain span of time.

Resuming what the study of the concerned biocoenoses has learned us, we may say :

1. The *Amphioxus*-ground may be rich in species, but generally has a low nemic index, is no rich breeding ground.

2. Only in the case the biocoenosis contains a rather great quantity of organic material, we find a comparatively high nemic index.

3. With increasing depth the nemic index increases, which makes us conclude that because in abyssal depths the quantity of available organic material is low the nematodes are generally bound to the littoral zones.

4. The nematode faunas of Mediterranean, Sea of Marmara, Black Sea and Sea of Azov belong to the same zoogeographical area. Probably traffic plays a great part in the distribution of nematodes as also may floating algae. Many species are bound in their distribution to this zoogeographical unit.

ALLGÉN (1942) moreover mentions from Banyuls the following species further to not found in the Mediterranean (compare p. 10) :

298. *Leptosomatum sabangense* STEINER (?).
299. *Phanoderma parafilipjevi* ALLGÉN.
300. *Oncholaimus viridis* BASTIAN.
301. *Pelagonema obtusicauda* FILIPJEV.
302. *Pelagonema tenue* KREIS (*P. propinque* ALLGÉN).
303. *Syringolaimus striaticaudatus* DE MAN.
304. *Paracanthonchus cæcus* (BASTIAN), Cette, Banyuls.
305. *Parachanthonchus ophthalmophorus* STEINER.
306. *Cyatholaimus sunesoni* ALLGÉN.
307. *Hypodontolaimus zosteræ* ALLGÉN.
308. *Hypodontolaimus heymonsi* (STEINER).
309. *Spilophora gracilicauda dolichura* DE MAN.
310. *Spilophora kryptospiculum* ALLGÉN.
311. *Euchromadora mediterranea* ALLGÉN.
312. *Pareuchromadora fragilis* (ALLGÉN).
313. *Chromadorella filiformis* (BASTIAN).
314. *Allgeniella tenuis* (G. SCHNEIDER).
315. *Chromadora paramucrodonia* ALLGÉN.
316. *Microlaimoides weberi* ALLGÉN (*Linhomoeid*).
317. *Aræolaimus elegans* DE MAN.
318. *Aræolaimus cobbi* STEINER.
319. *Aræolaimoides microphthalmus* DE MAN, Banyuls, Sardinia, Capella, Balai.
320. *Odontophora paratenuicaudata* ALLGÉN.
321. *Camacolaimus tardus* DE MAN.
322. *Monhystera gracilis* DE MAN, Cette, Banyuls.
323. *Monhystera ambigua* DE MAN, Banyuls.
324. *Monhystera paratenuispiculum* ALLGÉN.
325. *Monhystera macqueriensis* ALLGÉN.
326. *Eleutherolaimus leptosoma* DE MAN.
327. *Paralinhomœus lepturus* DE MAN.
328. *Paralinhomœus longicaudatus* ALLGÉN.

I give this list without further criticism, although I do not in all respects agree with ALLGÉN's identification. Neither did I take account of the percen-

tages already calculated at an earlier date, which, due to the present investigations of ALLGÉN will undoubtedly undergo some change, although the general trend remains the same.

Finally DE CONINCK wrote some papers concerning Mediterranean Nematodes after the manuscript was sent to press, which contain some new species (1936, 1937, 1942 A and B) which species I will enumerate here :

329. *Metaræolamoides oxystoma* DE C., Sardinia.
330. *Xenella suecica* ALLGÉN, Sardinia, Oeresund.
331. *Euchromadora* spec., Castiglione, Alger.
332. *Metadasynemella macrophalla* DE C., Beaulieu, Monaco.
333. *Ceramonema chitwoodi* DE C., Cap Martin, Menton.
334. *Ceramonema filipjevi* DE C., Beaulieu, Monaco.
335. *Ceramonema undulatum* DE C., Cap Martin, Menton.
336. *Pselionema richardi* DE C., Beaulieu, Monaco, Menton.
337. *Pselionema simile* DE C., Cap Martin, Menton, Beaulieu, Monaco.
338. *Pselionema simplex* DE C., Beaulieu, Monaco, Cap Martin, Menton.

Utrecht, 15 November 1941.

THE

FREELIVING MARINE NEMAS

OF THE MEDITERRANEAN

I

THE BAY OF VILLEFRANCHE

SYSTEMATICAL PART

Order I : ENOPLOIDEA.

Family **LEPTOSOMATIDÆ.**

Genus LEPTOSOMATUM Bastian, 1865.

1. — **Leptosomatum bacillatum** (Eberth, 1863).
(Fig. 1, A, B.)

3 juvenile specimens from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

Unfortunately the original description of *Leptosomatum bacillatum* Eberth given by this author is very incomplete as are also his figures. We may however conclude from Eberth's figure 1, which depicts the anterior end of a female with two eyes, that the specimen was figured either from the dorsal or from the ventral side, otherwise one eyespot only should have been depicted. The socalled pores, which in reality are small setae with their afferent nerveducts are depicted in this figure on both lateral sides and not on the surface which is directed against the observer. Now all specimens of *Leptosomatum* as well as of *Leptosomatides* possess rows of cervical or subcephalic setae at the lateral sides. It is essential to know how the amphids of the type specimens are constructed and in this we remain in doubt.

I wish to emphasize that the tail end bears likewise a number of similar papillar setae, which is essential for our comparison with related species. Filipjev (1918-1921) gives in his monograph of the freeliving marine nemas of the Blach Sea a redescription of *Leptosomatum bacillatum* (Eberth).

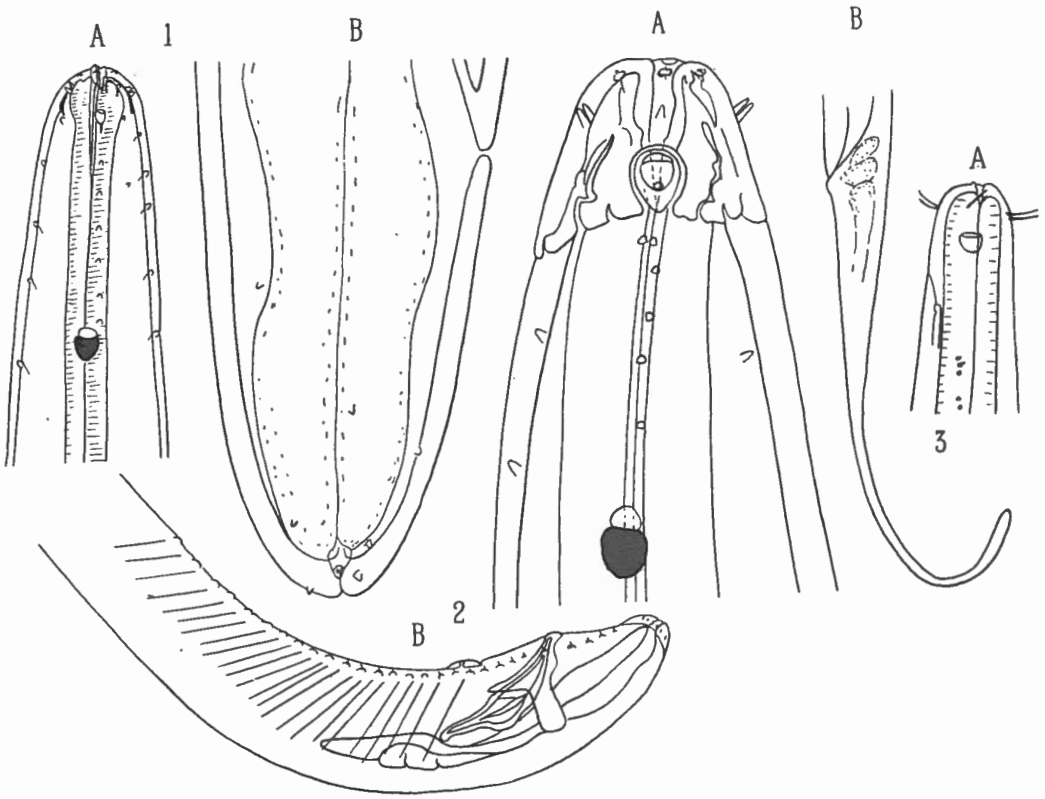


Fig. 1. — *Leptosomatum bacillatum* (Eberth).
A : Head of a juvenile. B : Tail of the same.

Fig. 2. — *Thoracostoma steineri* Micoletzky.
A : Head of a male. B : Male tail.

Fig. 3. — *Anticoma pellucida* Bastian.
A : Head. B : Tail of a female.

In his description and figures we have to do with a species with minute subcephalic papillae on the lateral sides of the anterior end, papillae of minor length than those of the specimens from Villefranche and apparently of minor length as well as compared with the specimens of the Black Sea. The amphids are of markedly larger size than those of the present specimens, and what may be of more importance even, the tail end of Filipjev's female did not present the rows of papillae, which Eberth's female presented. So I doubt if Eberth's species and that identified as such by Filipjev are in reality conspecific.

Neither am I quite convinced that the female identified by DE MAN (1885) as belonging to *Leptosomatum bacillatum* EBERTH did in reality belong to the said species. His figures are too poor to decide this question and as far as the description is concerned this may fit as well to that of *L. bacillatum* as to that of another species. There is however as to my opinion a rather great chance that DE MAN really had to do with the mentioned species.

I have thought for a while that the present specimens might belong to *Leptosomatides euxina* FILIPJEV, but the tail of this species is decidedly shorter than that of *Leptosomatum bacillatum*. So I have come at last to the conclusion that my specimens of Villefranche are in reality specimens of the type species *Leptosomatum bacillatum* (EBERTH) and that the specimens kept for representants of that species by FILIPJEV (1918-1921) do belong to another although closely allied species for which I propose the name *Leptosomatum filipjevi*.

Dimensions :

1 juv. L. 9,5 mm; $\alpha = 98{,}5$; $\beta = 6{,}85$; $\gamma = 98{,}5$.

0	360	1400	M	9400	9500 µ.
32	80	88	100	68	

The index β falls a little bit out of the range of variation of EBERTH's species. Body tapering rather much towards the anterior end, long and slender. Head end bluntly rounded anteriorly. Head not set off by a special constriction. Head capsule faintly indicated. Anterior crown of labial papillae composed of 6 elements. Follows a crown of 10 cephalic papillae in the usual distribution. Further the anterior body end presents 6 longitudinal rows of subcephalic or cervical papillae, 2 lateral rows, and 4 submedian rows, extending to about the neighbourhood of the eyespots. These are situated on a distance from the anterior end, equal to 3,5 times the width of the head at a level with the cephalic papillae. Amphids minute, pouch-shaped, their slit not larger than 7 % of the cephalic diameter. Buccal cavity shallow, leading into the oesophageal cavity. Anterior end of the oesophageal cylinder distinctly swollen. Nerving at 26 % of the total length of the oesophagus. Along the oesophagus we find large cells filled with granules. These cells might be cuticular glands but apparently do not belong to the system of lateral field glands.

Tail end cylindrical, almost quite 1,5 times as long as the anal diameter. Apparently the tail bears the same number of longitudinal rows of papillae as the anterior end of the body and here too they are arranged more or less in such longitudinal rows. Spinneret terminal, being the outlet of voluminous caudal glands.

GEOGRAPHICAL DISTRIBUTION : Nice, Villefranche, Banyuls (ALLGÉN, 1942), Naples, Black Sea. ALLGÉN (1940) mentions to have found it along the Norwe-

gian Coast near Stappen. The tail of his female was however comparatively shorter, when in comparison with its width; the head end is insufficiently depicted. His female from Banyuls misses, as far as it is not misfigured the rows of papilliform setae.

Genus THORACOSTOMA Marion, 1870.

2. — **Thoracostoma steineri** Micoletzky,

(Fig. 2, A, B.)

1 ♂, 1 juv. from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.
1 juv. from « Baie de Lilong », sand. Depth 5 m.

Like the foregoing species *Thoracostoma steineri* is apparently a form occurring in shallow water. Just as in the case of *Leptosomatum*, *Th. steineri* is insufficiently known from the descriptions of my predecessors. Then unfortunately Micoletzky, which has studied also the male, has given no figures of a male specimen, which would enable us an easy identification, since the differences in the males of different species are generally more pronounced than those in the females.

Dimensions :

♂ : 5,760 mm; $\alpha = 51{,}5$; $\beta = 4{,}64$; $\gamma = 57{,}6$.

0	40	100	460	1240	M	5240	5580	5760 µ.
24	40	68	92	100	112		112	

Head end rounded anteriorly. Head capsule very vigorous. Oral opening rather small. Labial papillae distinct, 6 in number. A crown of 10 distinct cephalic setae, 14,6 % of the corresponding cephalic diameter. Amphids pear-shaped with a narrow posterior end, 23,7 % of the corresponding diameter. Oesophageal end of body with distinct lateral rows of subcephalic minute papillae, the submedian papillae not quite arranged in rows. Eyespots at a distance from the anterior end equal to 2,93 times the length of the cephalic capsule, which is 40 micra long. Nerve ring at 37,2 % of the oesophageal length.

Tail with distinct caudal glands, the cell bodies of which have shifted to in front of the cloaca. Shape of tail bluntly conical, rounded posteriorly, quite as long as its anal diameter. The tail possesses a terminal row of 6 minute setae at each lateral side. Moreover we find 4 pairs of postcloacal elevations in 2 rows, each elevation crowned with a small seta, like this is the case in *Th. trichodes* (Leuckart, 1849). These rows do extend till far in front of the cloaca. Here we find in total 24 pairs of praeanal papillae, of which the 18 anterior ones bear no setae. I counted 30 bands of bursal muscles, which are closely adjacent in the present species and cover the same distance along the body as the praeanal warts. This distance équals 4,25 tail lengths.

Apart from the mentioned elevations we find a ventromedian wart, opposite to the proximal end of the spicula, separated from the cloaca by a distance only slightly shorter than the tail is long. The shape of the spicula is very peculiar. They are 1,34 times as long as the anal diameter. Their manubrium is rather narrow. Then the spicula widen greatly to the middle, whereas their distal end is again narrow and truncate. Gubernaculum vigorous with broad and blunt dorsal apophysis. Its distal end embraces the distal portion of the spicula for a great deal. As far as the genital armature is concerned the present species resembles rather much that of *Synonchus strasseni* TUERK.

GEOGRAPHICAL DISTRIBUTION : Naples, Villefranche. I have seen a female form Alexandria, Egypt. MICOLETZKY (1922) found it in Suez. ALLGÉN (1942) says to have found the same species at Banyuls. His figures however miss accuracy.

Genus ANTICOMA BASTIAN, 1865.

3. — **Anticoma pellucida** BASTIAN, 1865.

(Fig. 3. A, B.)

2 ♂♂, 4 ♀♀, 2 juv. from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.
1 ♀, 1 juv. from Villefranche, off « Vieux Villefranche », black mud and organic detritus. Depth 20 m.

In my treatment of the nemas of the Northsea and the Baltic I did synonymize *Anticoma acuminata* (EBERTH) after the description of COBB (1891) with *Anticoma limalis* BASTIAN. Now that I myself have seen specimens of the Mediterranean, which undoubtedly belong to the same species as COBB described, I feel compelled to revise my opinion and think now, that EBERTH's *A. acuminata* after the diagnose of COBB has to be synonymised with *A. pellucida* BASTIAN. The main reason why I have separated *A. pellucida* BASTIAN from *A. limalis* BASTIAN was the difference in situation of the excretory pore in relation to the amphids and the cervical setae.

Now it appears that in the specimens of Villefranche, the excretory pore is situated just halfways the amphids and the anterior seta of the cervical group. And as for the amphids they are situated just like in the specimens studied by COBB « half way between the cephalic setae and the pore ».

Remains the question if COBB's *A. acuminata* (EBERTH) is conspecific with the *A. acuminata* of EBERTH, a question that is somewhat difficult to decide, because EBERTH does not mention the pore. There is however another difference between COBB's and EBERTH's specimens which COBB solves by saying : « Seemingly by a misprint, the neck was stated to be one third as long as the body ».

Now I have found in Villefranche what I consider to be the true *Anticoma acuminata* (EBERTH). In one of the males of that species measured by me the oesophagus was nearly quite 1/3 as long as the body length.

In these males, as well as in the accompanying females, the excretory pore was found on a level with the foremost of the group of cervical setae. So I come to the conclusion — which was likewise the result of my studies for « the freeliving marine nemas of the North Sea and Baltic » — that *A. pellucida* Bastian and *A. acuminata* Eberth ought to be considered as distinct species. Daday's *A. acuminata* apparently belongs to the same species as the present female, confer the forward position of the vulva and the relative length of the oesophagus.

Dimensions :

♀ : 2,19 mm; $\alpha = 42{,}1$; $\beta = 5{,}1$; $\gamma = 7{,}8$; V. = 49,2 %.

Filipjev's formula :

0	196	428	1080	1902	2192 µ.
16	32	44	52	28	

Head bluntly rounded anteriorly. 6 minute labial papillae. 10 cephalic setae, nearly half as long as the corresponding body diameter. Opening of amphids 28,5 % of the corresponding body diameter, halfways between the cephalic setae and the excretory pore, which is separated from the anterior border of the head by not quite 1,5 times the cephalic diameter at the level of the cephalic setae. Cervical setae in one of the females arranged in 2 groups, composed of respectively 3 and 2 setae, separated from the foreborder of the head by a distance 2,5 times as long as the body diameter at the level of the cephalic setae. A similar distribution was observed by Micoletzky (1924) in the specimens this author identified as *A. acuminata* Eberth. Female tail slender, 8,4 times as long as the anal diameter, slightly swollen at the tip, devoid of setae.

4. — Anticoma insulæ-albæ Filipjev, 1925.

(Fig. 4, A, B.)

1 ♂, 2 ♀ ♀, 2 juv. from Villefranche, black mud and organic detritus farther end of the « Porte de la Darse ». Depth 3 m.

Dimensions of a ♂ :

Length 3,11 mm; $\alpha = 40{,}5$; $\beta = 5{,}5$; $\gamma = 18{,}2$.

Filipjev's formula :

0	176	244	524	M	2756	3116 µ.
20		56	68	72	56	

Filipjev's ♂ :

Length 4,56 mm; $\alpha = 35$; $\beta = 8$; $\gamma = 30$.

It is with some hesitation, that I bring the specimens from Villefranche to Filipjev's *A. insulæ-albæ*, although there are many points in common, the dimensions of the mediterranean specimens are considerably smaller, a feature not uncommonly observed when arctic specimens of a certain species are

compared with representants of the same species from more southern latitudes. Moreover there is a rather great difference in the index γ. At the other hand my specimens from Villefranche have so many points in common with FILIPJEV's

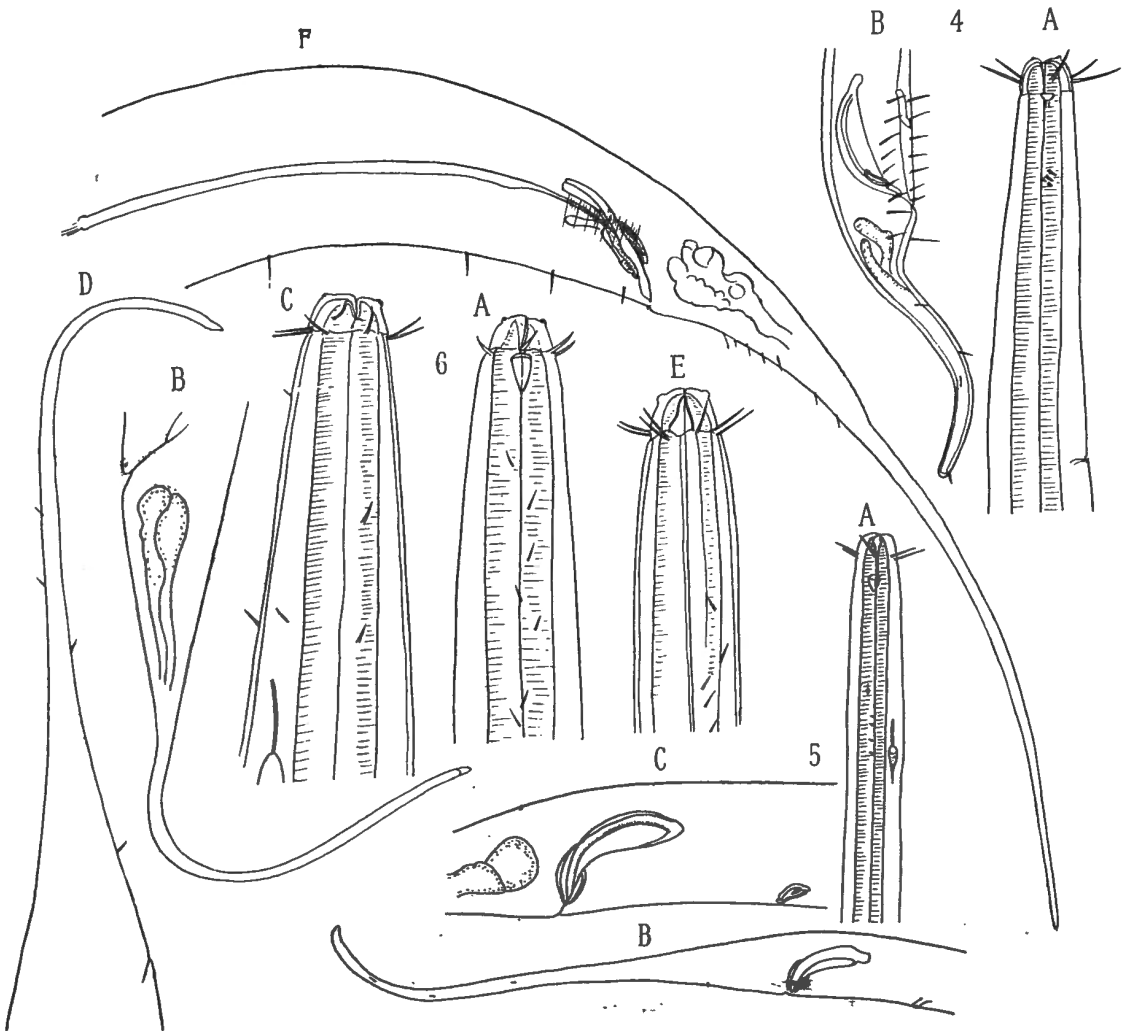


FIG. 4. — *Anticoma insulæ-albæ* FILIPJEV.
A : Male head.
B : Male tail.

FIG. 5. — *Anticoma acuminatum* (EBERTH).
A : Male head. B : Male tail.
C : Male genital armature.

FIG. 6. — *Stenolaimus paralepturus* n. sp.
A : Female head. B : Female tail. C : Female head end. D : Female tail. E : Male head.
F : Male tail.

specimens of *A. insulæ-albæ,* that I feel justified in bringing the present specimens to *A. insulæ-albæ* better than to create a new species for them. The specimens in question are characterized by the backward position of the

excretory pore, the irregular grouping of the cervical setae, just like in the type specimens, and by the fact, that shape and relative position of the spicula towards the praeanal tubulus, the shape of the tail as well as the distribution of caudal and praecaudal setae of the specimens of Villefranche are identical with those in the type specimens.

Anterior portion of the body tapering. Head rounded anteriorly, labial papillae distinct. 10 cephalic setae, the longer ones measure 75 % of the corresponding cephalic diameter. Cephalic portion distinctly set off against the remainder of the body, quite adjacent to the amphids, the opening of which measures 23,5 % of the corresponding body diameter. Cervical setae separated from the anterior border of the head by a distance equal to 2,1 % the body diameter at the level of the cephalic setae. Nerve ring at 46 % of the whole oesophageal length. Excretory pore not far from the nerve ring, at 71 % of the distance between the anterior end and the nerve ring or slightly posterior to the anterior limit of the last praeneural third of the oesophagus.

Spicula arcuate, their chord 1,5 times as long as the anal diameter. Gubernaculum small. Praeanal tubulus at a level with the proximal end of the spicula. There are 2 submedian rows of rather distinct praecaudal setae, which are composed of 6-7 praeanal and 1-2 postanal setae. Therefore each row is composed of 8 to 9 setae in total. Tail, 4 anal diameters long, basal fourth conical, followed by a cylindrical flagellum, beset with some irregularly scattered setae. Lower lip of cloaca prominent.

From *A. trichura* Cobb (1898) to which the present species shows some resemblance it differs i.a. by the more forward position of the excretory pore, the smaller size of the amphidial opening and the more backward position of the praeanal tubulus.

5. — **Anticoma acuminata** (Eberth, 1863).

(Fig. 5, A-C.)

1 juv. from Villefranche, off « Vieux Villefranche », black mud and organic detritus. Depth 20 m.
5 ♂♂, 6 ♀♀, 2 juv. from « Baie de Lilong », near Villefranche. Depth 5 m.
2 ♀♀, 4 juv. from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

Above I have asked attention for the fact, that according to me *A. acuminata* and *A. pellucida* are distinct species (confer p. 29).

Female and male presented the following dimensions :

♂ : 1,56 mm; $\alpha = 32,5$; $\beta = 3,23$; $\gamma = 7,1$.

Filipjev's formula :

$$\frac{0 \quad 52 \quad 232 \quad 484 \quad M \quad 1344}{8 \quad\quad 28 \quad 44 \quad 48 \quad 28} \quad 1564\ \mu.$$

♀ : 2,1 mm; $\alpha = 34,3$; $\beta = 4,1$; $\gamma = 7,3$; V. = 53,3 %.

FILIPJEV's formula :

0	240	500	1100	1780	2060 µ.
8	32	52	60	28	

Dimensions of EBERTH's :

♂ : 2 mm; $\alpha = 26$; $\beta = 3$.

♀ : 2,5 mm; $\alpha = 25$.

After the indications given by EBERTH it is not certain that in both male and female the oesophagus measured 1/3 of the total length of the body. There exists however a striking identity in the relative oesophageal length between my male and that of EBERTH, which brings I think the justification of EBERTH's observations and measurements and is in contradiction with the postulation of COBB (1891) where this author says : « seemingly by a misprint the neck was stated to be one-third as long as the body ».

A further difference between *A. acuminata* and *A. pellucida* is the situation of the excretory pore. The excretory pore is found at a level with the cervical hairs and far behind the amphids separated by a distance, slightly less than 1/4 of the whole oesophageal length from the anterior end of the body. The opening of the amphids is situated at 1/4 from the distance between the anterior border of the head and the foremost of the row of 4 cervical setae. Width of amphidial opening 28 % of the corresponding body diameter, and as far from the anterior head border. Foreborder of the head bluntly rounded. Buccal cavity narrow. 10 cephalic setae. The submedian setae are paired and unequal in size; the longer setae equal 71 % the corresponding body diameter. Nervering at 48 % of the oesophageal length.

Spicula curved, with fine velum and short manubrium. Spicular chord almost as long as the anal diameter. Gubernaculum short, of fine texture. Praeanal tube, 2 anal diameters in front of the cloaca.

Male tail gradually tapering to a rather long and filiform flagellum, the latter slightly swollen at its tip. The tail bears some minute setae in scattered position. Length of male tail nearly equal to 8 anal diameters. The female tail is 10 anal diameters long.

GEOGRAPHICAL DISTRIBUTION : Nice, Banyuls, Cette, Naples, Adria, Baleares, Mallorca, Ibiza.

Genus STENOLAIMUS MARION, 1860.

The present material brings 2 species of the mentioned genus a long-tailed form *Stenolaimus paralepturus* n. sp. and a form with distinctly shorter tail *Stenolaimus metagracilis* n. sp.

6. — **Stenolaimus paralepturus** n. sp.

(Fig. 6, A-F.)

1 ♀, from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.
1 ♂, 1 ♀, 2 juv. from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.
2 ♀♀, 2 juv. off the « Pointe de la Gavinette », grey mud. Depth 80 m.

Filipjev has given in 1928 a good figure of the male *Stenolaimus gracilis* (von Linstow). Southern (1914) did depict both male and female of *Stenolaimus marioni* (Southern) after specimens from the Irish Sea. In 1931 Schuurmans Stekhoven and Adam found a juvenile specimen of the latter species in material from the Belgian Coast. Recently (1932) Allgén has given a compilation of the litterature on the Genus *Stenolaimus*, Allgén comes to the conclusion that the mysterious type species *St. lepturus*, collected near Marseille, should be kept in the genus *Stenolaimus*.

After having described three new species of *Stenolaimus*, I intend to come back on the interrelations between *Stenolaimus* and the *Phanodermatidæ*.

Dimensions :

♂ : 5,64 mm; $\alpha = 40{,}2$; $\beta = 3{,}06$; $\gamma = 13$.

0	800	1840	M	5240	5640 µ.
20		120	140	80	

♀ 1 : 4,82 mm; $\alpha = 34{,}4$; $\beta = 2{,}6$; $\gamma = 12{,}76$; V. = 64,3 %.

0	720	1840	3100	4420	4820 µ.
40		120	140	60	

♀ 2 : 5,8 mm; $\alpha = 41{,}4$; $\beta = 3{,}6$; $\gamma = 11{,}6$; V. = 64,1 %.

0	600	1600	3400	5210	5800 µ.
20	60	120	140	80	

The species of *Stenolaimus* undoubtedly are the most difficult to identify because the differences between the species are inconspicuous and especially because the head portion misses outstanding characteristic features.

The present species is most closely allied to *St. gracilis* (Linstow), differs from it i.a. in its size, which might be partly due to the fact that representants of a certain species collected in southern latitudes are generally smaller than those of northern latitudes. Moreover in my specimens the excretory pore is placed somewhat more forward. Apparently however *St. gracilis* misses the cervical setae, that are placed here more or less in rows. Similarly there is a difference in shape and size of the amphids between my species and *gracilis*. Neither are there in *gracilis* praecloacal setae, whereas also the shape of the gubernaculum is quite different.

A comparison with *St. marioni* Southern makes it clear that its gubernaculum differs with that of the mentioned species. Further differences are found

in the pilosity at the anterior body end, and in the position of the excretory pore.

St. lepturus MARION at its turn is much smaller and besides possesses cervical hairs placed in dense longitudinal rows. It possesses an excretory pore which is placed much more forward than in the present species and finally it possesses a tail which is distinctly more slender than in our species. So I feel obliged to create a new species for the specimens of Villefranche, for which I propose the name *paralepturus*.

Body strongly attenuated anteriorly, its width at the anterior end is hardly more than 16 % of the width at the posterior end of the oesophagus. Cuticle smooth, provided with longitudinal rows of widely spaced cervical setae at the lateral sides, whereas the male possesses some prae- and postcloacal medioventral setae.

Amphids pouch-shaped, situated immediately behind the cephalic suture, amphidial slit transverse, 29 % of the corresponding cephalic diameter.

Head with prominent, more or less fleshy lips, provided with prominent labial papillae, a narrow buccal slit, but no true buccal cavity, since the oesophagus is attached to the foreborder of the buccal funnel. 10 cephalic setae, of which the submedian ones are paired; the partners of each pair slightly unequal in size, the longer ones measure 58 % of the corresponding cephalic diameter. In one of the females a distinct « rinnenförmige Grube » was observed.

Excretory pore situated at 5 cephalic diameter from the anterior end of the body.

Spicules very long, their length equalling 7 anal diameters, slightly swollen at their proximal end, filiform, presenting an attenuation towards the distal end, after which they widen again and are pointed at the extreme apex. Gubernaculum of complex structure, showing proximal excresences of coarse texture; middle portion thickened. Length of gubernaculum equal to 1,4 anal diameters. Tail in both sexes long, conical at its base, quickly tapering in its basal third, apical 2/3 filiform, extreme apex pointed. The male tail shows, like mentioned above, à scarse pilosity, whereas the female tail is almost devoid of hairs.

7. — **Stenolaimus metagracilis** n. sp.

(Fig. 7, A-D.)

4 ♀♀, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

Dimensions :

♀ 1 : 6,26 mm; $\alpha = 52$; $\beta = 8{,}23$; $\gamma = 14{,}2$; V. = 53,3 %.

0	340	760	3360	5820	6260 µ.
20	80	120	120	80	

♀ 2 : 6,7 mm; $\alpha = 67$; $\beta = 8{,}3$; $\gamma = 13{,}4$; V.= 53,7 %.

0	340	800	3600	6200	6700 µ.
20	60	100	100	60	

The main differences between this and the foregoing species lie in the shorter relative length of the oesophagus, the smaller number of setae composing the rows of cervical setae, in the distinctly shorter flagellum of the tail, and the more forward position of the vulva.

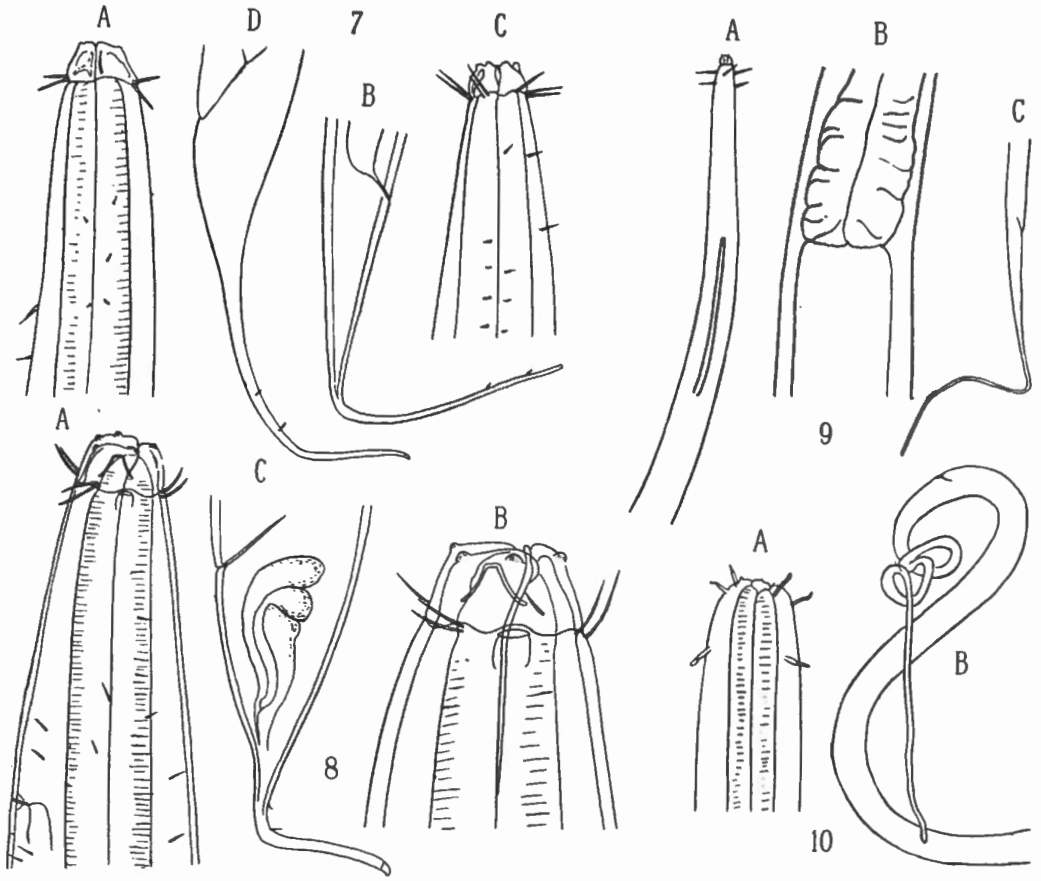


FIG. 7. — *Stenolaimus metagracilis* n. sp.
A C : Female head end.
B D : Female tails.

FIG. 8. — *Stenolaimus brevicaudatus* n. sp.
A : Female head. B : Same head enlarged.
C : Tail.

FIG. 9. — *Halalaimus gracilis* DE MAN.
A : Female head end. B : Base of œsophagus.
C : Female tail.

FIG. 10. — *Trefusia longispiculosa* BRESSLAU and SCHUURMANS STEKHOVEN.
A : Male head. B : Male tail

Head distinctly set off against the remainder of the body, with prominent labial papillae. Cephalic setae comparatively long, subequal as far as they are found in pairs, measuring 71 % of the cephalic diameter. Vulva distinctly more forward. Neither amphids nor excretory pore observed. Tail conical at base, rather quickly tapering to the comparatively short flagellum, which occupies 47,5-57 % of the whole tail length. Length of tail equal to 5,6-6,6 anal diameter. On the tail some few scattered setae.

8. — **Stenolaimus brevicaudatus** n. sp.

(Fig. 8, A-C.)

1 ♀, from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

The female in question shows great affinities to *St. paralepturus*. At the same time one is inclined to think at a representant of the genus *Klugea*, but this is difficult to decide after a female only, since the main difference between *Stenolaimus* and *Klugea* lies in the presence or absence of a praecloacal tubulus in the male sex. The present female differs from *St. lepturus* MARION in the comparatively shorter tail and especially in the shorter length of its flagellum. Like in other species of *Stenolaimus* we find a « rinnenförmige Grube ».

Dimensions :

♀ : 6,68 mm; $\alpha = 25$; $\beta = 3{,}9$; $\gamma = 15{,}7$; V. = 61 %.

$$\frac{0 \quad 640 \quad 1680 \quad 4080 \quad 6280}{40 \quad 100 \quad 180 \quad 260 \quad 120} \quad 6680\ \mu.$$

Head distinctly trilobed, each lip with 2 prominent labial papillae. Cephalic capsule absent. Cephalic suture sinuous, immediately followed by a crown of 10 cephalic setae, those situated in the lateral fields particularly small and not surpassing 20 % of the cephalic diameter, the longer parthers of the submedian pairs measure 55 % of the corresponding diameter, the shorter partners 44 % of that same diameter. Amphids just posterior to the sinuate suture line of the head, almost 15 % of the corresponding diameter. Tail conical at its basal 3/5, filiform at its apical 2/4 only. Excretory pore on 4,6 cephalic diameter from the anterior head end. Lateral fields 1/3 as wide as the corresponding diameter. Caudal glands contained in the interior of the tail only and not surpassing this limit. Some minute setae are scattered over the tail as well over the oesophageal portion of the body.

A comparison of the present form with FILIPJEV's *Klugea trilabia* brings about differences in the relative tail portions and in the data of the cephalic setae, which are comparatively longer than in our species.

DISCUSSION : The head of *Stenolaimus* resembles the head of *Phanoderma*, although it misses a true cephalic capsule. In details it has also many points in common with the head of *Anticoma*. At the other hand we have to bear in mind that neither *Micoletzkya* nor *Phanodermopsis*, according to SCHUURMANS STEKHOVEN (1935) both belonging to the *Phanodermatidæ* possess a cephalic cuirass. The male genital armature of *Micoletzkya* is quite similar to that of *Stenolaimus*. In the latter genus however the praeanal tube, which *Anticoma*, as well as *Micoletzkya* and *Phanoderma* have, is lacking. It must be stated that *Anticoma* and *Stenolaimus* occupy a more or less isolated position in the

family of *Leptosomatidæ*, whereas both have features in common with the *Phanodermatidæ*. If we should shift *Stenolaimus* to the *Phanodermatidæ*, the same thing ought to be done with *Anticoma*. The microscopical structure of both lastnamed genera is insufficiently known and so it would be premature to change at present the systematic position of *Anticoma* and *Stenolaimus*, although future researches at the hand of a large material may prove, that it will be necessary to regroup several *Leptosomatidæ* and *Phanodermatidæ*. For the present we will however leave *Stenolaimus* in the *Leptosomatidæ* family.

Genus HALALAIMUS De Man, 1888.

9. — **Halalaimus gracilis** De Man, 1888.

(Fig. 9, A-C.)

1 ♀ in rather bad condition from Villefranche « Baie de Lilong », sand. Depth 5 m.
1 ♀, Villefranche, off the « Porte de la Gavinette », grey mud. Depth 80 m.

The tip of the tail of the female of Baie de Lilong in question has been snapped. In its dimensions and in the distribution and relative size of the cephalic setae it fits quite into the scheme of the mentioned species. Foreborder of amphids 7 cephalic diameters from the anterior headend. The amphids themselves are however comparatively longer than for instance in the specimens depicted by De Man. In De Man's specimens the amphidial slits were 1,5 times as long as the distance from the anterior border of the body to the amphids.

In the female from Baie de Lilong this relation is 10,8 : 1, which relation however may fall in the range of variations a species presents.

Dimensions of the other :

♀ : 1,48 mm; $\beta = 3{,}5$; $\gamma = 5{,}45$; V. = 55 %.

0	240	420	808	1212	1480 µ.
4	20	24	32	16	

In dimensions this female falls quite in the range of variations of *Halalaimus gracilis*, like also the figure may show.

Geographical distribution : North Sea, Baltic, Öresund, Trondjhemsfjord, Stappen, Coast of Norway, Mediterranean, Sea of Marmara, Suez.

Genus TREFUSIA De Man, 1893.

10. — **Trefusia longispiculosa** Bresslau & Schuurmans Stekhoven, 1935

(Fig. 10, A, B.)

1 ♂, 1 ♀, from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

Dimensions :

♀ : 2,4 mm; $\alpha = 67$; $\beta = 9{,}15$; $\gamma = 2{,}26$; V. = 31,6 %.

$$\frac{0 \quad 156 \quad 264 \quad 764 \quad 1344}{16 \qquad 32 \quad 36 \quad 24} \quad 2404\ \mu.$$

The specimens were in rather bad condition, but so far as might be concluded from the available data, they belong to the species created by Bresslau and Schuurmans Stekhoven. The head presents the typical *Trefusia* type with the more or less fleshy lips, crowned with minute labial papillae. There are 6 digitate cephalic setae, each measuring 40 % of the corresponding cephalic diameter. Somewhat more backwards a cervical crown of similarly digitate setae is found. The length of these setae is 30,5 % of the corresponding body diameter.

Buccal cavity minute, more or less caliciform. The oesophagus is attached at the anterior border of the head. Oesophagus cylindrical. Nerve ring at 59 % of the oesophageal length. Tail very long and twisted with a long flagellum which ends blunt, with a rounded tip. Flagellum occupying 43,5 % of the tail length. Length of tail equal to 22,2 anal diameters.

Discussion : Cobb (1893) has found at Naples a species which he called *Rhabdocoma macrurum* Cobb. This species resembles our form. It has a similar head, similar position of cervical setae, but differs from *Trefusia longispiculosa* in the shape and size of the spicula. The spicula of *Tr. longicauda* however are similar in shape to those in both species of *Rhabdocoma*. The shape of the tail of both *Trefusia* and *Rhabdocoma* is again identical. Unfortunately I have not observed the amphids of the specimens of Villefranche. Those of *Trefusia* are cyathiform with a cryptospiral slit, whereas the amphids of *Rhabdocoma* are quite circular like in the Monhysteroidea. Till we know more about it I have left *Rhabdocoma* under the Monhysteroidea.

The dimensions of *Rh. macrurum* do not differ much from those of *Tr. longispiculosa*, neither do the indices.

Further material is urgently wanted to study the affinities of the mentioned species.

Geographical distribution : Helgoland, Mediterranean.

Family **PHANODERMATIDÆ.**

Genus PHANODERMA Bastian, 1865.

The genus *Phanoderma* comprises a number of species, most of which are comparatively insufficiently known. In 1924 Micoletzky has given a synoptic key for the mediterranean species, based on the males of the species, he had studied from that region. Unfortunately extensive descriptions of the new species the said author did create at that occasion never were published, so that we are confined to the scanty data given by Micoletzky.

This is very regrettable because the Mediterranean proves to be rich in species belonging to the mentioned genus. Most species of *Phanoderma* seem to be comparatively rare. Seldom more than a couple of specimens of such a species is found, which forms a hindrance to a thourough study. In a footnote Micoletzky utters his doubt if the specimen from Teneriffa which Steiner (1921) did identify with *Ph. tuberculatum* (Eberth) really belongs to that species, because Micoletzky says : « no males were available ». According to Micoletzky new studies are urgently wanted to state if we are able to discern the different species of *Phanoderma* after the females.

The material I have to my disposition from Villefranche as well as from Alexandria brings me to the conviction that the females too may serve to distinguish between the species of *Phanoderma*. Not only the shape of the tail, but also the relative position of eyespots and excretory pore, as well as the pilosity of head and body does enable us to identify a certain female.

Moreover I was fortunate enough to find the male partner to the Steiner's species of Teneriffa. Now it became evident that Steiner's *Ph. tuberculatum* in reality belongs to a distinct species, which like a survey of the literature taught me, is identical with the species described by Ditlevsen as *Phanoderma cocksi* Bastian and later on brought to *Phanoderma ditlevseni* Filipjev by Filipjev (1925).

11. — **Phanoderma ditlevseni** Filipjev, 1925.

(Fig. 11, A, B.)

2 ♂♂, 1 ♀, from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

Dimensions :

♂ 1 : 3,780 mm; $\alpha = 36{,}7$; $\beta = 3{,}7$; $\gamma = 33{,}7$.

Filipjev's formula :

$$\frac{0 \quad 48 \quad 348 \quad 1008 \quad M \quad 3668}{14 \quad\quad 80 \quad 100 \quad 104 \quad 60} \quad 3780\ \mu.$$

♂ 2 : 3,880 mm; $\alpha = 38{,}8$; $\beta = 3{,}6$; $\gamma = 23{,}3$.

Filipjev's formula :

$$\frac{0 \quad 50 \quad 360 \quad 1060 \quad M \quad 3580 \quad 3740}{40 \quad\quad\quad 100 \quad 100} \quad 3880\ \mu.$$

♀ : Length 3,144 mm; α = 41,3; β = 3,13; γ = 28,07; V. = 64,6 %.
FILIPJEV's formula :

$$\frac{0 \quad 36 \quad 256 \quad 1004 \quad 2032 \quad 3032}{20 \quad\quad 48 \quad\quad 64 \quad\quad 76 \quad\quad 44} \quad 3144\ \mu.$$

Head strongly attenuated anteriorly, truncate at its apex. Labial region crowned with 6 labial papillae. Cephalic capsule with long and slender posterior excrescences, that surpass the cephalic suture in caudal direction, over a little distance. Cephalic setae comparatively long and slender, 10 in number, the submedian ones paired, subequal, the longer partners measuring 43 % of the corresponding cephalic diameter, whereas the shorter partners and the lateral unpaired setae do not surpass 39 % of the corresponding diameter in length. Lateral setae slightly more forward than the submedian pairs. Amphids immediately posterior to the lateral setae, their openings comparatively large, especially in comparison with those of *Ph. tuberculatum* (EBERTH), 20 % of the corresponding body diameter. Eyes distinct, pigmentspots square. The anterior end of the pigmentspot is separated from the anterior head end by a distance equal to 1,57 times the cephalic diameter measured at a level with the setae. The excretory pore is separated from the head end by a distance equal to 2,07 times the distance head end-eye-spots. In the female from Teneriffa, studied by STEINER, this distance was 2,15 times the distance head end to eye-spots.

The number of setae is identical to that found in *Ph. tuberculatum* EBERTH as can be stated after EBERTH's figure, but *Ph. tuberculatum* EBERTH easily may be distinguished from the present species by the much longer setae in the oesophageal region. In the present species these setae are short and irregularly scattered, not arranged in rows, like was depicted in EBERTH's figure.

Buccal cavity bordered by 3 cuticularized plates of unequal strength en length. Oesophagus cylindrical. Nerve ring at about 34 % of the oesophageal length, that is slightly anterior in comparison with the specimens studied by EBERTH. In the female of Teneriffa the nerve ring was situated at 37,9 % of the oesophageal length.

At first sight the male genital armature of my specimens resembles that of the type species. But closer comparison reveals several essential differences. In its general shape the spicula are similar to those of the type species, but if we consult MICOLETZKY's synoptical key we are aware of the fact that the spicula in *Ph. tuberculatum* are not barbed or provided with a denticular ridge, like this is the case in the present species and further that *Ph. tuberculatum* has a very inconspicuous gubernaculum, whereas the same structure is very prominent in the present species.

These differences alone I think would suffice to separate the present species from *Ph. tuberculatum* EBERTH. The praeanal tubulus, separated from the cloacal aperture by a distance equal to 2,5 anal diameters in found in front of

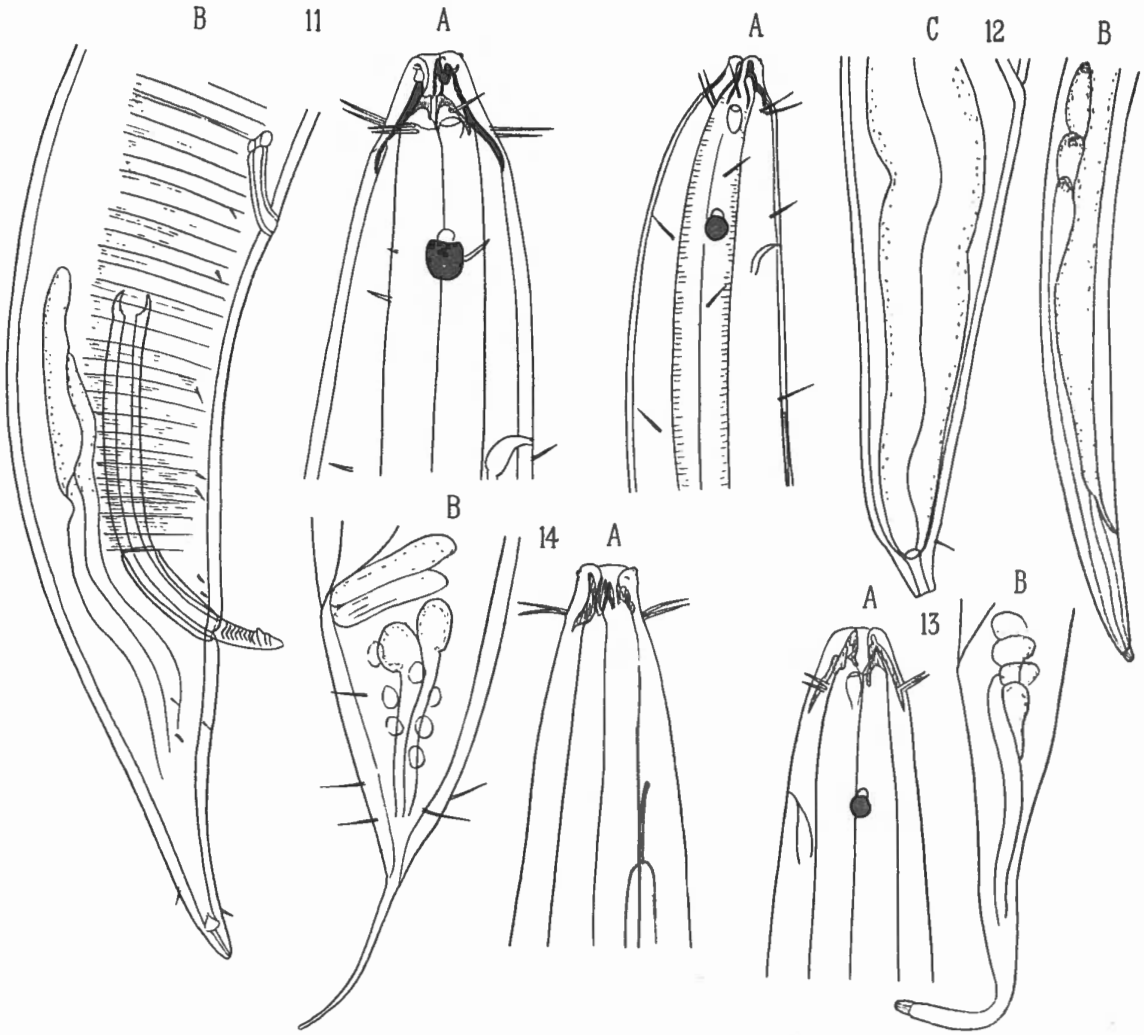


Fig. 11. — *Phanoderma ditlevseni* Filipjev.
A : Male head.
B : Male tail.

Fig. 12. — *Phanoderma nasutum* n. sp.
A : Female head. B : Female tail.
C : Female tail, greatly enlarged.

Fig. 13. — *Phanoderma laticolle* (Marion).
A : Head juvenile specimen.
B : Tail of the same.

Fig. 14. — *Phanoderma parasiticum* Ditlevsen.
A : Female head.
B : Female tail.

the proximal end of the spicula. Spicula slightly curved, provided with a single barb near the distal end, where one finds similarly a denticular ridge. Distal end of spicula with a blunt point, proximal end of the same slightly swollen but not bulbar. Length of spicula equal to 2,5 anal diameters. Gubernaculum in the shape of a fine sheath. The praeanal tubulus and the

cloacal aperture are connected by means of 2 rows of subventral minute bristles, each row composed of 7-8 setae. 51-52 cuticular bands compose the bursal musculature. Cell bodies of spinneret glands shifted to the praecaudal part of the body but not further anterior than the proximal end of the spicula. Cell bodies twisted.

Tail elongate conical, 2,25 times as long as the anal diameter, provided with a terminal spinneret. Along the tail some short scattered setae.

Female resembling the male in most particulars. Amphids of the same relative diameter. Nerve ring at 25,5 % of the oesophageal length. Body of excretory cel, ending in front of the posterior end of the oesophagus.

Tail like in the male, elongate conical, gradually tapering towards the apex, 2,7 anal diameters long. In *Ph. tuberculatum* EBERTH the tail has a somewhat different shape. Here the tail possesses a more knobbed end and bears longer setae too.

The present specimens are almost quite in accordance with the description given by DITLEVSEN (1923) for his *Phanoderma cocksi* BASTIAN from the river Auray and from Glénans (Côtes de Bretagne et Rockall). In all essential features our specimens agree with those from the said species. Apparently the tail of DITLEVSEN's male of *Ph. cocksi* was comparatively shorter than that of my male but even more so than that of DITLEVSEN's female, which shows a tail of similar shape as that of the male in question. DITLEVSEN's male had a tail which measured 1,6 anal diameters, whereas the female partner had a tail of which is quite 2 anal diameters long. At the other hand the relative position of the eyespots and the excretory pore is such that the latter has been shifted nearer to the eyespots than was the case in my specimen from Villefranche. In the female studied by DITLEVSEN the excretory pore was separated from the anterior head end by a distance equal to 1,64 times the distance anterior head end-eyespots. The latter are situated on a distance equal to 1,4 cephalic diameters from the anterior head end which is almost quite as far as in my male. So I am convinced that not only my male but also STEINER's *Ph. tuberculatum* from Teneriffa are identical with the species DITLEVSEN did redescribe as *Ph. cocksi* BASTIAN. The species is closely related to *Phanoderma gracile* DE MAN, but has a distinctly shorter tail.

GEOGRAPHICAL DISTRIBUTION : Auray, Glénans, Villefranche, Teneriffa.

12. — **Phanoderma nasutum** n. sp.

(Fig. 12, A-C.)

1 ♀, from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

At first I was inclined to reckon this female, since it was found in the same sample as both males of the foregoing species to *Phanoderma ditlevseni* FILIPJEV, but closer observation learned me that such an identification was impossible, since 1) the anterior head end is even more sharply attenuated than in that species, 2) because the excretory pore, which is very inconspicuous, opens quite near the eyes and 3) because the three caudal cell glands are shifted far forward and are not twisted like in *Ph. ditlevseni* FILIPJEV but occupy a tandem position. The foremost glandcell is much more forward than in STEINER's male from *Ph. ditlevseni* from Teneriffa.

The female in question makes a much more slender impression, although it is in a state of high pregnancy, than the males of the former species.

Dimensions :

♀ : 3,144 mm; $\alpha = 41{,}3$; $\beta = 3{,}13$; $\gamma = 28{,}07$; V. = 64,6 %.

0	36	256	1004	2032	3032	3114 µ.
	28	48	64	76	44	

Head end pointed, rounded anteriorly. Labial papillae inconspicuous. Head capsule weak, not very pronounced, not prolonged backwards from the cephalic setae. The cephalic setae rather fine and slender, the submedian setae paired and half as long as the corresponding cephalic diameter, the lateral setae slightly more forward and somewhat shorter i.e. 40,9 % of the corresponding diameter. Amphids elongate, egg-shaped with a minute slit, not quite 14 % of the corresponding diameter. Some slender setae in the cervical portion of the head, placed more or less in longitudinal rows. Eyespots with oval pigmentspot, separated from the head end by a distance equal to twice the cephalic diameter at the level of the cephalic setae. Excretory pore minute at a level with the eyespots. Buccal cavity narrow, embraced by three cuticular plates. Oesophagus narrow in the cervical region, then very broad and almost quite filling up the whole lumen of the body, its borders crenulated. Uterus with 4 well developed eggs. Caudal glands in tandem position, the foremost one more than 11 anal diameters in front of the anal aperture. Tail elongate conical, with a terminal spinneret. The tail is 3 anal diameters long. There is only a single praeapical seta on the tail.

The head end of *Ph. nasutum* is very much slike that of *Ph. laticolle* (MARION). Both species may however be easily distinguished by their tails, which is elongate conical in *nasutum*, whereas the tail of *laticolle* possesses a filiform tip.

13. — **Phanoderma laticolle** (MARION, 1870).

(Fig. 13, A, B.)

1 juv. from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

Dimensions :

1 juv. 1,96 mm; $\alpha = 32{,}5$; $\beta = 3{,}26$; $\gamma = 12{,}2$.

$$\frac{0 \quad 40 \quad 300 \quad 600 \quad 1800}{20 \qquad\qquad 60 \quad 50} \quad 1960\ \mu.$$

If one looks after the figure MARION has given from his male, it becomes at once clear that the tail is several times longer than its anal diameter. Now MARION mentions in his list of dimensions, that the tail is 130 μ long and 80 μ wide at the anal aperture. If we suppose that the last date is correct than the tail is in reality 337,6 μ long after the figure MARION has given from his male. In consequence the index is not 42,3 like we should think after the dimensions, only 16,3. If this is taken into account then our dimensions are in good accordance with those of MARION. The general shape of the tail in both cases as well as the circumstance that the excretory pore opens quite near the eyespots brings me to the conviction that my specimen is conspecific with MARION's *Ph. laticolle*. Head rounded anteriorly, not distinctly set off against the neck, since the anterior attenuation is less distinct than in allied species. Cephalic capsule distinct, composed of cuticular plates, which extend rather far backwards. The plates that enclose the buccal capsule are fenestrate, when observed from the lateral side of the body.

Cephalic setae shorter and distinctly more rigid than in the foregoing species, 10 in number. Lateral setae slightly in front of the submedian pairs, immediately followed by the comparatively minute amphidial openings. Length of lateral setae equal to 37,5 % of the corresponding cephalic diameter, the submedian setae although slightly longer than the lateral ones measure only 37 % of the corresponding diameter, because they are placed somewhat more backward. Amphids small, amphidial opening 16,6 % of the corresponding body diameter.

Eyespots on a level with the excretory pore, separated from the anterior head border by a distance equal to 1,84 cephalic diameters at the level of the implantation of the submedian setae. Pigment spots of eyes roundish. Nerve ring at 50 % of the oesophageal length. Tail 4,6 anal diameters long, rather slender gradually tapering, more or less with a flagelliform posterior portion. Spinneret distinctly demarcated. Caudal glands ending just in front of the anal opening twisted.

Tip of tail slightly clavate.

GEOGRAPHICAL DISTRIBUTION : Marseille (MARION), Villefranche, Alexandria.

14. — **Phanoderma parasiticum** Ditlevsen, 1926.

(Fig. 14, A, B.)

1 ♀, from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

Dimensions : 5,34 mm; $\alpha = 39,5$; $\beta = 5,93$; $\gamma = 24,2$; V. = 50,5 %.

Filipjev's formula :

Ditlevsen's female :

0	900	2700	5120	5340 µ.
20	140	140	140	

Length : 6,2 mm; $\alpha = 41$; $\beta = 5,2$; $\gamma = 20,5$; V. = 59 %.

Although my specimen present some slight differences with the type specimen discovered by Ditlevsen (1926) near Hanstholm I feel justified to bring the specimen in question to that species. At the same time I must point to an error in the numbering of the figures on page Vb 24 of my book on the *Nematoda errantia* in : Die Tierwelt der Nord- und Ostsee, where what is indicated as figure 96 *b*, is in reality figure 95 *b*, whereas the figures 95 *b* and 95 *c* should bear the numbers figure 96 *b* and 96 *c*.

This species is characterized by the fact that it misses the ocelli and has a tail, which conical at its proximal portion suddenly attenuates and presents a rather long filiform tip.

Head truncate, almost parallel-sided. Labial papillae prominent. Cephalic setae 10 in number, distributed as usually, 75 % of the corresponding cephalic diameter. Amphids not seen. Buccal cavity rather wide, its walls strengthened by strong cuticularisations, that are the folds of the cephalic capsule, the walls of which near each other so close, that there remains only a very minute slit between both lamina of each fold. Excretory pore at a distance equal to 3 cephalic diameters from the anterior end. Tail as described above, the filiform tip being somewhat longer than in the specimens of Ditlevsen, length of tail 2,6 anal diameters, that of the filiform portion just as long as the anal diameter. The conical portion of the tail bears some rather long, irregularly scattered setae.

Geographical distribution : Danmark (Hanstholm), Villefranche.

15. — **Phanoderma elegans** n. sp.

(Fig. 15, A, B.)

1 ♀, from Villefranche, « Baie de Lilong », sand. Depth 5 m.

This species is characterized by its slenderness, by its rather weak head capsule and the elongate filiform tail, which is even much more slender than in De Man's *gracile*.

Dimensions : ♀ : 3,104 mm; $\alpha = 51,7$; $\beta = 4$; $\gamma = 13,3$; V. = 44,2 %.

0	32	300	772	1372	2932	3104 µ.
12		44	56		24	

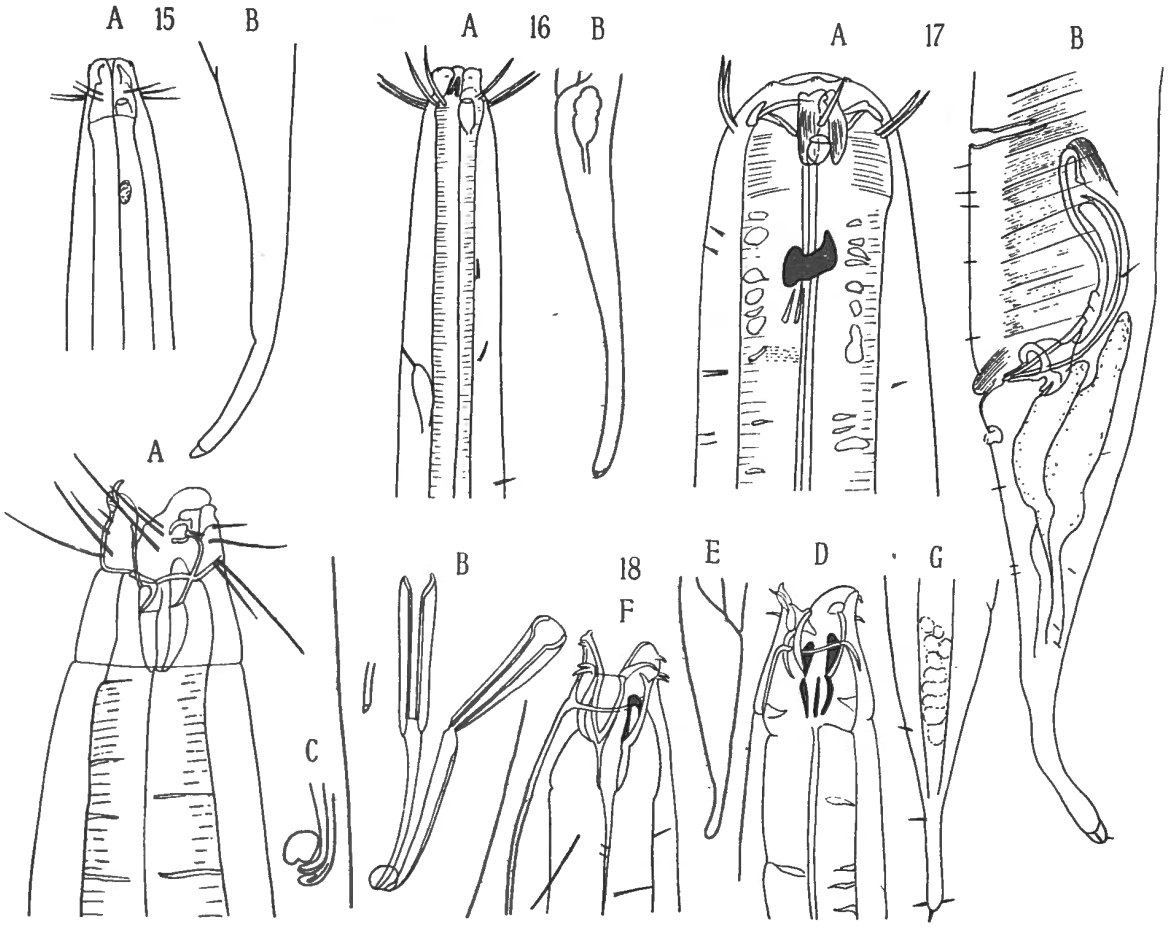


FIG. 15. — *Phanoderma elegans* n. sp.
A : Juvenile head. B ; Tail.

FIG. 16. — *Galeonema longicauda* n. sp.
A : Juvenile head. B : Tail.

FIG. 17. — *Enoplus meridionalis* STEINER.
A : Male head. B : Tail.

FIG. 18. — *Mesacanthion tricuspis* n. sp.
A : Male head. B : Male genital armature. C: Spicula and gubernaculum. D: Juvenile head. E : Tail of the same. F : Head of the other juvenile. G : Tail of the same.

Head truncate anteriorly. Labial papillae not very conspicuous. Head capsule not vigorous. Cephalic setae rather slender, the lateral setae 66 % of the corresponding diameter. Amphids cyathiform, 22 % of the corresponding diameter. Eyespots separated from the head by a distance equal to 2,1 cephalic diameters.

Tail elongate, more or less filiform, gradually tapering, length of tail equal to 4,7 anal diameters.

Genus GALEONEMA Filipjev, 1925.

16. — **Galeonema longicauda** n. sp.
(Fig. 16, A, B.)

1 juv. from Villefranche, « Baie de Lilong », sand. Depth 3 m.

Dimensions :

Length : 2,86 mm; $\alpha = 59{,}5$; $\beta = 3{,}08$; $\gamma = 14{,}3$.

Filipjev's formula :

$$\frac{0 \quad 320 \quad 780 \qquad\qquad 2660}{12 \quad 40 \quad 48 \quad 48 \quad 40} \quad 2860\ \mu.$$

This species, which is recorded here as new shows great affinities to Filipjev's *Galeonema caudata*. From the latter species it may however be distinguished at once by the much longer cephalic setae, the distinctly set off head and by the fact that the tail is not effilate but more gradually tapers to the rather narrow rounded apex. Head portion distinctly set off against the remainder of the body, more or less cylindrical, with prominent lips and prominent labial papillae. Cephalic setae long, equal in length to the corresponding cephalic diameter, lateral setae slightly in front of the submedian pairs, immediately followed by the amphids, which show a rather long amphidial pouch and a narrow amphidial slit, that measures 20 % of the corresponding cephalic diameter. Cephalic capsule reduced; like in all other species of the genus, we observe 3 pointed plates only round the buccal cavity. Ocelli absent. Some short setae are observed along the oesophageal portion of the body, placed more or less in rows. Excretory pore separated from the anterior border of the head by a distance equal to 4,5 cephalic diameters measured at the level of the cephalic setae. Nerve ring at 41 % of the oesophageal length. Tail 6 anal diameters long and slender, gradually tapering to the more cylindrical portion, which is slightly swollen at its extreme apex. Caudal glands restricted to the interior of the tail.

The species shows some affinities as to its head with *Chætonema* but undoubledly must be reckoned to the Phanodermatidae. For further data about its systematic position we have to wait for the detection of the respective male.

Family ENOPLIDÆ.

Genus ENOPLUS Dujardin, 1845.

17. — Enoplus meridionalis Steiner, 1921.

(Fig. 17, A, B.)

2 ♂♂, 3 ♀♀, 1 juv. from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.
1 ♂, 1 ♀, from Villefranche, off the Station, same kind of habitat. Depth 15 m.

The species in question answers best to Steiner's description of *Enoplus communis* var. *meridionalis*, which De Coninck and I (1933) have synonymized in 1933 with *E. striatus* Eberth, notwithstanding the existing differences. Unfortunatly Steiner has given meither a description nor figures of the anterior end of his specimen. If however the male tails of both species are compared the attentive observer will find several differences. Not only is the supplementary organ separated from the anal aperture by a greater distance in *striatus*, like this is illustrated by Eberth (1863), than in Steiner's *meridionalis*, but besides its shape is more tubular in *meridionalis*, more trumpet-shaped in *striatus*. At the other hand Eberth depicts subventral rows of rather long praeanal setae in his *striatus*, whereas the setae situated on the praeanal portion of the body between supplementary organ and cloaca are more irregularly scattered in *meridionalis*. It has to be asked in how far one must attribute specific importance to these differences, in how far they may be due to subjective observations of the different authors. At the moment De Coninck and I (1933) compared the literature, we had not yet specimens from the Mediterranean to our disposition. Now that I have some of these I find another difference of importance, i.e. the relative length of the jaws, that are distinctly longer in *E. striatus* Eberth than in the present specimens as well as in those of *E. communis* var. *meridionalis*. This brings me to the conviction, that Steiner's *E. communis* var. *meridionalis* which is neither a variety nor a synonym of *striatus*, but a valid species has to be named *E. meridionalis*.

Dimensions :

♂ : 2,672 mm; $\alpha = 29$; $\beta = 5$; $\gamma = 12{,}3$.

0	256	296	516	536		2464	2672 µ.
32				80	92	72	

Cuticle smooth, with minute setae irregularly distributed, especially over the oesophageal portion of the body. Head rounded anteriorly, not set off against the remainder of the body by a special constriction. Lips with 6 labial papillae. Cephalic setae 10 in number, the partners of the submedian groups almost equal in size (not equal in *communis*), 46,6 % of the corresponding cephalic diameter, lateral setae unpaired, 35,7 % of the cephalic diameter.

Amphids pouch shaped, their slit 11 % of the corresponding body diameter. Jaws three in number, with distinct median teeth; length of jaws 40 % of cephalic diameter measured at the level of the cephalic setae, blunt posteriorly, broadest in the middle, but only slightly attenuated towards the proximal end. In *striatus* the jaws measure 66 % of the corresponding cephalic diameter. Jaws attached to the body walls by means of a cuticularized ring. No true ocelli, only pigment spots distributed in the oesophageal tissue; the large socalled ocellar spot is immediately followed by a couple of large setae; the other setae of the same region are however minute. Male genital armature consisting of curved spicula, their cords being 1,5 times as long as the anal diameter; proximal end of the spicules attenuated, ventral surface with transverse indentations or incisions. Apex pointed. Gubernaculum short, embracing the proximal end of the spicules, in the shape of an irregular ring with some excrescences. Supplementary organ tubular, immediately in front of the proximal end of the spicula. Some short irregularly scattered setae in the space between the cloaca and the supplementary organ. Tail conical, gradually tapering, the last third more or less cylindrical. Length of tail 3 times as long as the anal diameter. Some irregularly scattered setae are found on the tail, especially on its subventral region. Apex slightly dilated, its width 1/7 the width of the anal diameter.

Length of Steiner's :

♂ : 2,531 mm; $\alpha = 26{,}1$; $\beta = 6{,}4$; $\gamma = 13\,5$.

Probably Micoletzky's specimen from Suez belongs also to the same species :

♀ : 2,6 mm; $\alpha = 23{,}5$; $\beta = 6{,}1$; $\gamma = 11$.

Geographical distribution : Teneriffa, Villefranche, Suez, Alexandria.

Genus MESACANTHION Filipjev, 1935.

18. — **Mesacanthion tricuspis** n. sp.

(Fig. 18, A-G.)

1 ♂, 2 juv. from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.
1 juv. from Villefranche, entrance of the road, grey mud. Depth 230 m.

The new species presents close affinities to *Mesacanthion klugei* Filipjev. With this species it has in common that the spicula are composed of two portions of divergent structure, opposite to what we find in other species of the same genus.

M. klugei and *M. tricuspis* may however easily be distinguished by differences in their pilosity as well as by the structure of their spicula. In *klugei* the pilosity of the head end is distinctly more dense, moreover longer than in *tricuspis*. As for the structure of the spicula, the proximal portion of the spicula is in *klugei* narrower than its distal portion, whereas the reverse is

true for *tricuspis*. The gubernaculum, although small-sized in both species is circular to heart-shaped in *tricuspis* and anvil-shaped in *klugei*. So it is justified to create a new species for this mediterranean form. Unfortunately the tip of the tail of my only male specimen was broken of. If one takes into account that the taillength in species of this type is hardly much longer in adult specimens than it is in larval forms, then we may estimate its length on 150 μ.

Length of a male :
2,862 mm; $\alpha = 28{,}6$; $\beta = 3{,}7$; $\gamma = 19$.

FILIPJEV'S *klugei* :
2,03-2,35 mm; $\alpha = 26\text{-}31\ (29)$; $\beta = 3{,}5\text{-}4\ (4{,}1)$; $\gamma = 17\text{-}18{,}5$.

Therefore in general dimensions FILIPJEV'S *klugei* and *tricuspis* are almost identical.

FILIPJEV'S formula :

0	360	760	M	(Anterior end of spicules) 2580	2712	
32		80	100	64		2862 μ.

Juveniles specimen 1 :
Length : 1,636 mm; $\alpha = 29{,}2$; $\beta = 3{,}49$; $\gamma = 12{,}7$,

0	468	1508	
10	56	32	1636 μ.

Specimen 2 :
Length : 2,040 mm; $\alpha = 34$; $\beta = 4$; $\gamma = 14{,}5$,

0	500		1900	
20	40	60	40	2040 μ.

In all three genera : *Enoplolaimus*, *Mesacanthion* and *Enoploides*, juveniles differ from adult specimens in that their cephalic pilosity is much less developed. Such fits likewise for our specimens.

The tail both in the male and in the juveniles is conical in its basal 2/3, posterior third cylindrical, slightly swollen at its extreme apex. The head end distinctly tapers, is longer than wide. Head with three lips, each lip with an apical flap, the latter crooked. Anterior crown of head sense organs composed of 6 setiform papillae. In juveniles there is a crown of apparently 10 cephalic setae of minor size, whereas the adult male presents a posterior crown of 10 setae of comparatively long size, the longer ones almost as long as the corresponding cephalic diameter and 71 % of the diameter at the suture.

Shorter partners of the submedian pairs measure only 53 % of the cephalic suture. An intermediate crown of setae likewise seems to be composed of 10 elements.

Buccal capsule conical, strengthened by the cuticularized walls. From the bottom of the cavity 3 teeth arise, one of which, the dorsal, slightly outreaches both subventral teeth. The last two reach just to the level of the cuticular rim. There is a cephalic organ opposite to the upper border of the dorsal jaw.

Spicula 2, 5 anal diameters long, composed of two portions, distal portion narrow, thinwalled, proximal portion in the shape of a gutter, which is narrowly open above, proximal end of the latter distinctly widened. Distal end of the spicules pointed. Gubernaculum small adhering to the spicules at their distal end. Supplementary organ tubular, opposite to the articulation of both portions of the spicula, just like in *klugei*.

In the juveniles there is only a single crown of minute setae just posterior to the fleshy flaps of the labia on the level of the cephalic organs. The other setae are lacking. Juvenile tail 2,8 times as long as the anal diameter, provided with some short setae along the dorsal surface and some setae near the tip. The difference our species shows with Filipjev's *klugei* in respect with its spicules partly depends on the angle, under which these are observed.

Genus ENOPLOIDES Ssaveljev, 1912.

19. — **Enoploides amphioxi** Filipjev, 1918-1921.

(Fig. 19, A-C.)

1 ♀, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

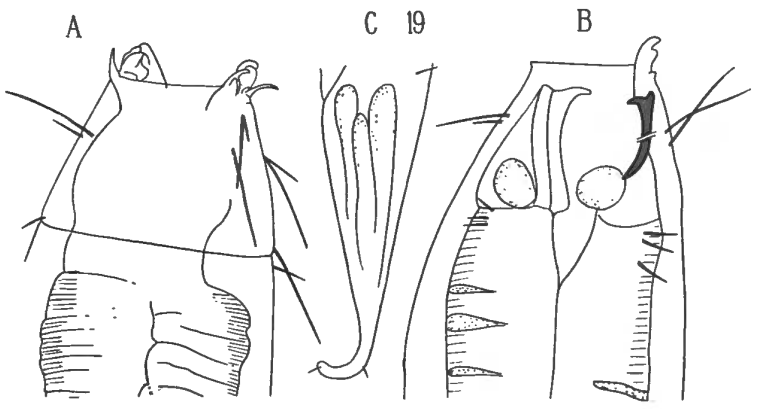


Fig. 19. — *Enoploides amphioxi* Filipjev.
A : Female head. B : Head, optical section.
C : Female tail.

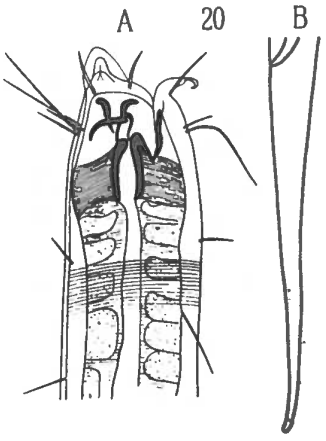


Fig. 20. — *Oxyonchus dubius* Filipjev.
A : Female head.
B : Female tail.

The female in question was in rather bad condition, but could be identified after the structure and pilosity of its head end as well as after its general shape and the shape of its tail.

Dimensions :

Length : 4,4 mm; $\alpha = 44$; $\beta = 3,86$; $\gamma = 24,4$; V. = 53,1 %.

Filipjev's formula : $\frac{0 \quad 240 \quad 1140 \quad 2340 \quad 4220}{60 \qquad 100 \quad 100 \quad 50}$ 4400 µ.

Geographical distribution : Black Sea, Sebastopol, Cernov, Villefranche.

Genus OXYONCHUS FILIPJEV, 1925.

20. — Oxyonchus dubius FILIPJEV, 1925.

(Fig. 20, A, B.)

1 ♀, from Villefranche, « Baie de Lilong », sand. Depth 3 m.

Length : 2,5 mm; $\alpha = 39$; $\beta = 4{,}31$; $\gamma = 9{,}6$; V. = 52 %.

FILIPJEV's formula :

$$\frac{0 \quad 140 \quad 580 \quad 1300 \quad 2240}{32 \quad 52 \quad 56 \quad 64 \quad 36} \; 2500\ \mu.$$

FILIPJEV's female :

Length : 3,375 mm; $\alpha = 42$; $\beta = 4{,}5$; $\gamma = 8$; V. = 60 %.

Our specimen answers fairly well to FILIPJEV's description. In its body-shape, in the considerable length of its tail especially, as well as in the distribution of the setae the present female shows a striking resemblance te FILIPJEV's *O. dubius*. Body attenuated almost twice anteriorly, less so posteriorly. Cuticle devoid of setae except in the cephalic body region.

Head end conical with three fleshy, comparatively low lips, each crowned with 2 labial setae. These are slightly longer than the lips are high and measure 55 % of the corresponding cephalic diameter. There is a crown of at least 10 cephalic setae, the submedian ones of which are paired. Submedian setae unequal, the longer partner equals 88 % of the corresponding cephalic diameter, the shorter one does not surpass 41 % of that diameter. Subventral jaws very prominent, reaching till in front of the cuticular rim. Tail elongated, very slender, gradually tapering towards the apex, 9 times as long as the anal diameter. In FILIPJEV's female the tail was 10 times as long as the anal diameter.

GEOGRAPHICAL DISTRIBUTION : Black Sea, Sebastopol, *Amphioxus*-ground near the Georgian Monastery, 9 fathoms, Villefranche.

FAMILY DORYLAIMIDÆ.

Genus DOLICHOLAIMUS DE MAN, 1888.
Syn. *Trissonchulus* COBB, 1920.

Close observation of the present species and a comparison of the literature brings me to the conviction, that COBB's *Trissonchulus* has to be synonymized with *Dolicholaimus*. The present species is closely allied to *Dolicholaimus obtusus* BRESLAU and SCHUURMANS STEKHOVEN but differs from the latter in that it does not possess the body papillae which where observed in longitudinal rows on the anterior portion of the body of that species.

21. — **Dolicholaimus nudus** Schuurmans Stekhoven, 1943.

(Fig. 21, A, B.)

1 ♀, from Villefranche, « Baie de Lilong », sand. Depth 3 m.

Dimensions :

♀ : 5,7 mm; $\alpha = 52,7$; $\beta = 9,5$; $\gamma = 285$; V. = 42,1 %.

Filipjev's formula :

$$\frac{0 \quad 88 \quad 280 \quad 600 \quad 2400 \quad 5680}{52 \quad \quad 88 \quad 100 \quad 108 \quad 88} \quad 5700\ \mu.$$

Cuticle totally devoid of setae. Head distinctly set off against the remainder of the body by a suture line. There are 6 prominent labial papillae, and apparently 6 groups of cephalic papillae, of which 3 are depicted in figure 21. I am rather sure that the submedian papillae are in reality double, like this is the case in specimens of the same species, collected at Alexandria, but this characteristic was apparently overseen by me during the study of the female from Villefranche. Amphids wide and pouch-shaped, adjacent to the suture line of the head. Amphidial slit 33 % of the corresponding body diameter. Buccal cavity embedded in the oesophageal tissue. This buccal cavity contains 3 spears with biuncinate apex, like this is the case in other species of the same genus. These spears measure 14 % of the oesophageal length. Nerve ring slightly in front of the middle of the oesophagus (47 %). Spinneret opening at the ventral side of the tail. This measures only 1,1 anal diameters. The present female does not possess praeapical papillae on its tail.

Geographical distribution : Mediterranean, Villefranche, Alexandria.

Genus ANONCHOLAIMUS n. gen.

22. — **Anoncholaimus rhopalurus** n. sp.

(Fig. 22, A-C.)

6 ♀, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

The genus *Anoncholaimus* shows as for its general outlook and especially as far as the oral cavity and the head end is concerned traces of relationship with the Dorylaimidae, but from the known genera of that family it is at once distinguished by the broad oral cavity, which is quite devoid of teeth. One might also think at a representant of the genus *Pelagonema* Cobb and if further material would prove a close relationship with that genus then the genus in question would belong to the Oncholaimidae and in that case in the relationship of *Pelagonema*. With that family it has in common the circle of 6 labial papillae as well as the circle of 10 cephalic setae. Each of the lips is in the possession of a single labial papilla. Till we have to our disposition the corresponding male sex the systematic position of the genus remains uncertain. And further I am not sure about the true nature of the amphids. There is a

lateral cleft, immediately posterior to the lateral cephalic hair, which ressembles strongly an amphid, but more posteriorly opposite to the bottom of the buccal cavity one finds a circular figure, connected with a tube-like structure, which might also represent an amphid. If the latter would have the value of an amphid, like I am inclined to think it has, then the former would have the meaning of a cephalic organ like we find in some Enoplidae.

Length : 1,076 mm; $\alpha = 44{,}5$; $\beta = 10{,}7$; $\gamma = 26{,}9$; V. = 50,6 %.

FILIPJEV'S formula :

$$\frac{0 \quad 60 \quad 92 \quad 544 \quad 1036}{6 \qquad 20 \quad 24 \quad 12} \quad 1076\ \mu.$$

Head demarcated by a cephalic suture. 6 lips with as many conical papillae. Cephalic setae short, the components of the submedian pairs equally

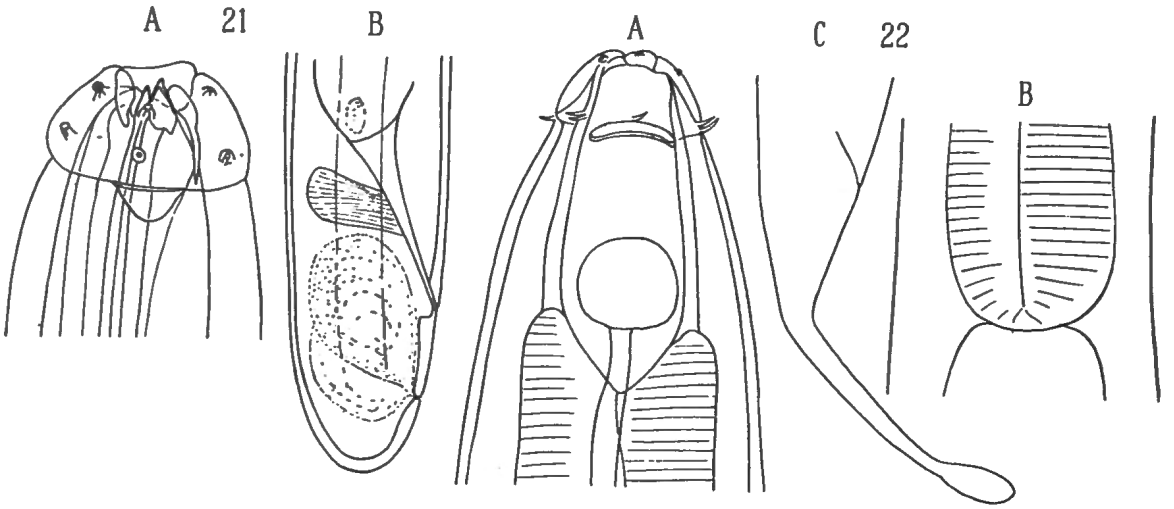


FIG. 21.
Dolicholaimus nudus SCHUURMANS STEKHOVEN.
A : Female head.
B : Female tail.

FIG. 22.
Anoncholaimus rhopalurus n. sp.
A : Female head. B : Base of œsophagus.
C : Female tail.

long, measuring 13,3 % of the corresponding cephalic diameter. Head cleft transverse at a level with the cephalic suture, its width equal to 54,2 % of the corresponding body diameter. Body tapering gradually to the anterior end, where it is 30 % as wide as at the posterior end of the oesophagus. Amphid (?) circular to oval, 39,8 % of the corresponding body diameter.

Buccal cavity conico-cylindrical, with strongly cuticularised walls the strength of which increases to the proximal end, being 3 times as long as its greatest width. Nervering at 65 % of the oesophagus length. Oesophagus without true bulbus, almost the same width throughout. Tail 4,2 times as long as the anal diameter, quickly tapering, conical at base, then filiform ending with a distinct knob. The filiform portion of the tail with its terminal swelling occupies 65 % of the whole taillength.

Family ONCHOLAIMIDÆ.

Genus ONCHOLAIMUS Dujardin, 1945.

23. — Oncholaimus dujardini De Man, 1878.

(Fig. 23, A-C.)

This species seems to be one of the most common species of the Mediterranean, as it frequently encountered by all authors who have made researches in this region.

1 juv. from Villefranche, « Baie de Lilong », sand. Depth 3 m.
3 ♂♂, 3 ♀♀, 4 juv. from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

Length of ♂ : 1,960 mm; $\alpha = 49$; $\beta = 5{,}1$; $\gamma = 49$.

Filipjev's formula :

$$\frac{0 \quad 24 \quad 80 \quad 200 \quad 380 \quad M \quad 1920}{20 \qquad\qquad\quad 40 \quad 40 \quad 24} \quad 1960\ \mu.$$

Length of ♀ : 2,184 mm; $\alpha = 45{,}5$; $\beta = 5{,}5$; $\gamma = 27{,}3$; V. = 66 %.

Filipjev's formula :

$$\frac{0 \quad 28 \quad 92 \quad 200 \quad 392 \quad 1464 \quad 2104}{24 \qquad\quad 44 \quad 48 \quad 48 \quad 24} \quad 1960\ \mu.$$

De Man's :

♂ : 2,588 mm; $\alpha = 50{,}7$; $\beta = 6{,}6$; $\gamma = 66$.

Micoletzky's :

♂ : 2,53 et 3,06 mm; $\alpha = 63{,}74$; $\beta = 7{,}8$; $\gamma = 66{,}69$, Suez.
♂ : 1,83 mm, Adria.

Filipjev's :

♀ : 2,85 mm; $\alpha = 45$; $\beta = 7\text{-}8$; $\gamma = 34\text{-}47$.

Micoletzky's :

♀ : 3,44, 3,76 mm; $\alpha = 57{,}68$; $\beta = 8{,}3\text{-}8{,}5$; $\gamma = 50{,}63$; V. = 77 %, Suez.
♀ : 2,2 mm; V. = 70 %, Adria.

According to my opinion Steiner's *O. dujardini* from Dar-es-Salam (1921) as well as from that Sumatra (1915) do not belong to the present species. As far as the specimens from Cette regards, who De Rouville (1904) have brought to this species we are not allowed to draw a certain conclusion after De Rouville's description. Fortunately I have to my disposition some copies of De Rouville's drawings made by De Man after the original drawings of De Rouville and consulting these we may be rather sure, that at least the females of the species De Rouville considered to be *O. dujardini* do belong to the same species, De Man has described as *O. dujardini*. In respect with the males of De Rouville I am not so certain, because De Rouville has not depicted the circumcloacal setae. *O. dujardini* is characterized i.a. by its rather broad buccal cavity, with one of its subventral teeth prominent and stout and reaching almost to the level of the cephalic setae. The cuticle presents along the oeso-

pharyngeal region a comparatively great number of short and stout setae, more or less arranged in longitudinal rows. Excretory pore separated in one of my females by a distance quite equal to 2,75 times the length of the buccal cavity. Tail in both sexes distinctly curved. Spicules sword-shaped. Cloacal region demarcated by a number of claw-like dorns, not depicted on DE ROUVILLE's figure. STEINER's *O. dujardini* of Sumatra (1915) may be separated from the present species by the more slender buccal cavity, by differences in the shape of the subventral teeth, by differences in the cephalic setae, by the more slender spiculum which is swollen at its proximal end as well as by the presence of a gubernaculum, not seen by me in the species studied from the Mediterranean. So I think we must consider STEINER's *O. dujardini* as a separate species for which I propose the name *O. steineri*.

Head with distinct lips, 6 labial papillae and 10 short cephalic setae. Submedian setae paired, subequal, the longer ones not surpassing 14 % of the cephalic diameter. Buccal cavity 2,25 times as long as its greatest width. Female tail curved ventrally, almost 3 times as long as the anal diameter. Male tail likewise 3 anal diameters long, its curvature embraces 90 degrees of the circumference of a circle.

Spicules sword-shaped, 1,75 times as long as the anal diameter. Cloacal region demarcated by a number of dorn-like short setae, the medioventral of which has the same shape as that in figure 4 *c* of DE MAN. Apart from these some other setae are distributed over the dorsal surface of the male tail.

GEOGRAPHICAL DISTRIBUTION : Mediterranean, Toulon, Banyuls-sur-Mer, Naples [DE MAN (1865), MICOLETZKY (1924)], Ischia, Rovigno, Ombla Bay, Bocce di Cattaro, Black Sea, Mallorca, Ibiza, Alexandria, Occurs in Bandirma, Sea of Marmara. ALLGÉN found it in Banyuls i.m. in great quantities.

Genus ONCHOLAIMELLUS DE MAN, 1890.

24. — Oncholaimellus mediterraneus SCHUURMANS STEKHOVEN, 1942.

(Fig. 24, A-D.)

1 ♂, 1 ♀, 2 juv. from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus. Depth 3 m.

Dimensions :

♂ : 1,992 mm; $\alpha = 41,5$; $\beta = 5,2$; $\gamma = 27$.

FILIPJEV's formula :

Dimensions : $\frac{0 \quad 32 \quad 180 \quad 380 \quad M \quad 1920}{20 \qquad\qquad 40 \quad 48 \quad 24}$ 1992 µ.

♀ : 1,884 mm; $\alpha = 33,6$; $\beta = 4,8$; $\gamma = 17$; V. = 42 %.

FILIPJEV's formula :

$\frac{0 \quad 32 \quad 172 \quad 392 \quad 792 \quad 1732}{24 \qquad 40 \quad 48 \quad 64 \quad 24}$ 1884 µ.

As to their dimensions the specimens from Villefranche although they ressemble to *O. calvadosicus* are not quite identical to the specimens formerly described by De Coninck and me (1933) as such from the Belgian Coast. Moreover there exist some morphological differences, as well in respect with the male genital armature as with the cephalic setae, so that I feel obliged to bring them to a new species.

In the male the setae distributed over the cuticle of the anterior portion of the body are particularly scarce and apparently shorter than in the *O. calvadosicus* male from Belgium. Cephalic setae 10 in number, in the female the

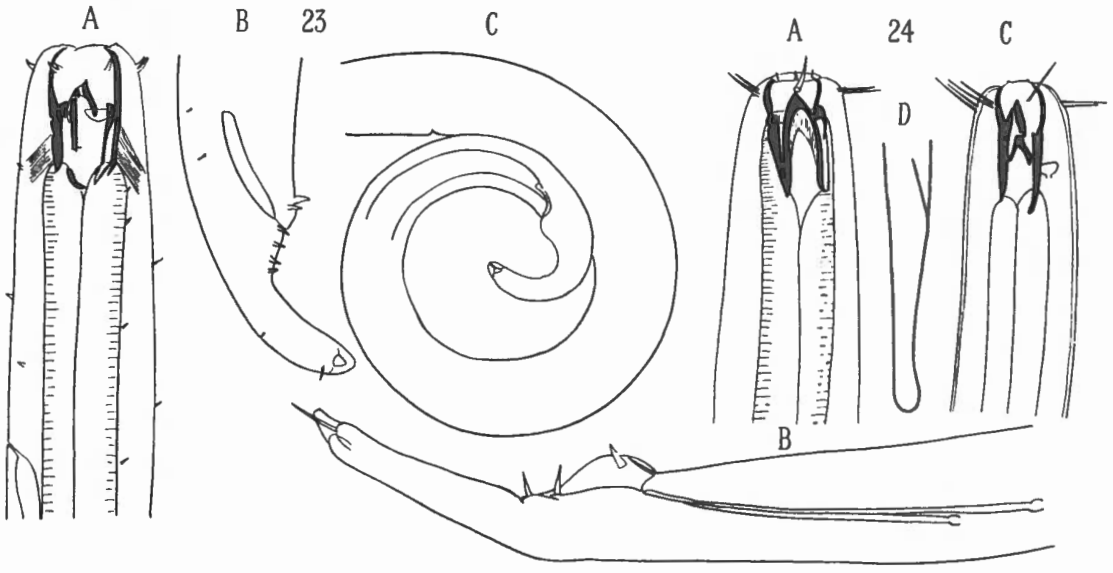


Fig. 23. — *Oncholaimus dujardini* De Man.
A : Male head. B : Male tail.
C : Female tail.

Fig. 24. — *Oncholaimellus mediterraneus* n. sp.
A : Male head. B : Male tail.
C : Female head. D : Female tail.

shorter ones measure 34,4 %, the longer ones 44,9 % of the corresponding body diameter (in *calvadosicus* from Belgium the relative length of these setae was respectively 41 and 51 % of the body diameter), in the male from Villefranche the relative length of the cephalic setae was 61,5 and 50 % (the same being 100 and 81 % in the *calvadosicus* male from Belgium) of the corresponding cephalic diameter. Buccal cavity 3,07 times as long as its greatest width. The large subventral tooth, the length of which measures 84,8 % of the length of the buccal cavity, reaches till the level of the constriction of this cavity; it is truncated distally. Dorsal tooth inconspicuous. Amphids small, situated opposite to the posterior portion of the buccal cavity, cup-shaped, their slit in the male sex not wider than 1/7 of the corresponding body diameter. Nerve ring in the male sex at 47 %, in the female sex at 44 % of the oesophageal length,

therefore more backwards than in *calvadosicus*, where it is found at 37-40 % of the oesophageal length. Spicules in the male unequally long, the longest 4,3 the shorter almost 3 times as long as the anal diameter, proximal end knobbed, therefore slightly longer than in *calvadosicus*. Bursa copulatrix distinctly developed, with dorn-shaped papillae and some strong setae. Of the

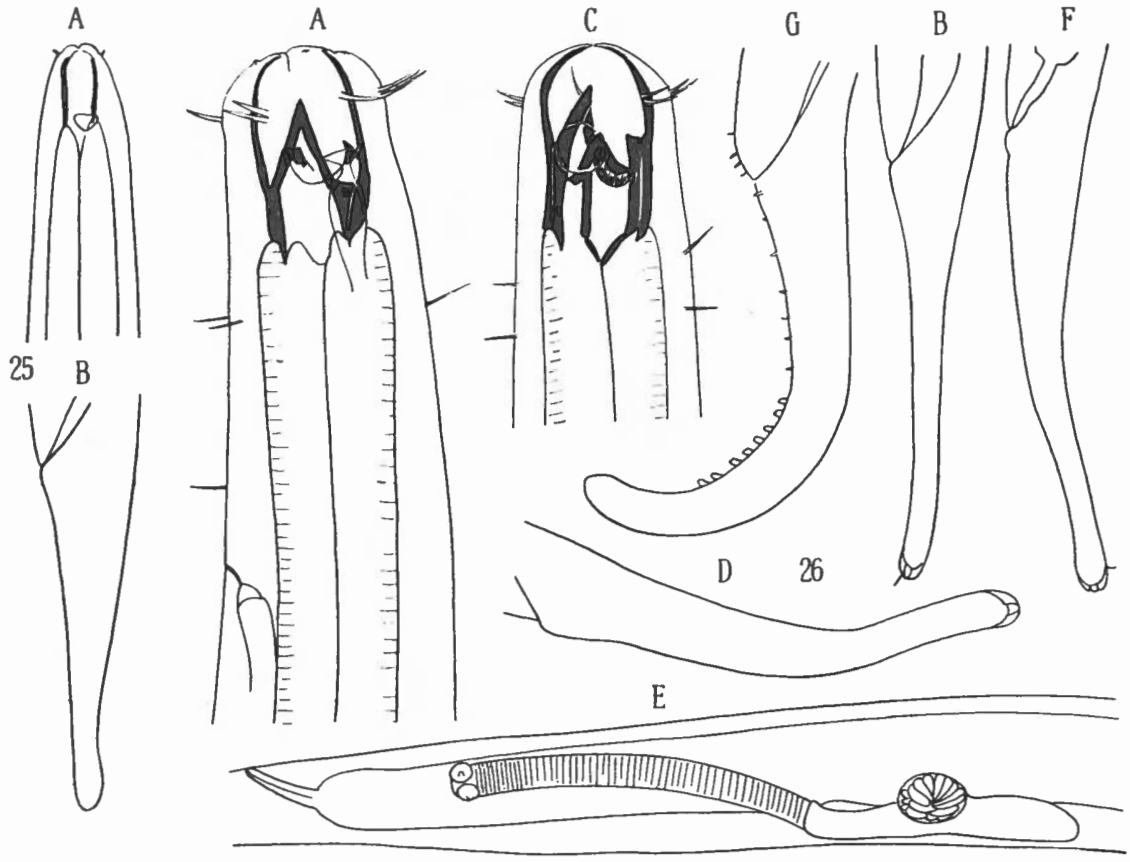


FIG. 25.
Filipjevia mediterranea n. sp.
A : Juvenile head.
B : Tail.

FIG. 26.
Metoncholaimus pristiurus (ZUR STRASSEN).
A : Female head end. B D F : Female tail.
C : Male head. E : Demanian system.
G : Male tail.

latter there are 3 pairs, but I miss the median pairs, present in *calvadosicus*. Male tail 3,92 times as long as the anal diameter measured at the base, and just in front of the bursa, provided with a rather strong praeapical seta. Female tail 5 times as long as the anal diameter, cylindrical, swollen at its apex.

GEOGRAPHICAL DISTRIBUTION : Mediterranean, Villefranche, Palma di Mallorca.

Genus FILPJEVIA Ditlevsen, 1928.

25. — **Filipjevia mediterranea** n. sp.

(Fig. 25, A, B.)

1 juv. from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

Dimensions :

Length : 0,884 mm; $\alpha = 31{,}5$; $\beta = 5{,}6$; $\gamma = 8{,}2$.

Filipjev's formula :

0	16	132	156	776	884
12			28	28	20

884 µ.

Kreis (1934) has postulated that in *Filipjevia* apparently neither lips nor papillae should be present. At the opposite the present larva leads me to the conclusion, that although less distinct than in other species true lips as well as 6 labial papillae are present. Cephalic setae opposite to the distal end of the buccal cavity, just 1/6 as long as the corresponding cephalic diameter. Buccal cavity almost 3 times as long as it is wide. Amphids opposite to the base of the buccal cavity 1/3 as wide as the corresponding body diameter. Tail conical, gradually tapering to the apex, which is slightly swollen. Length of tail equal to 3,7 anal diameters.

Genus METONCHOLAIMUS Filipjev, 1918.

26. — **Metoncholaimus pristiurus** (Zur Strassen, 1894).

(Fig. 26, A-G.)

1 ♂, 1 ♀, 4 juv. from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus. Depth 23 m.

1 ♂, 1 ♀, 3 juv. from off « Vieux Villefranche », black mud and organic detritus. Depth 20 m.

Dimensions :

♂ : 4,724 mm; $\alpha = 69{,}9$; $\beta = 9{,}6$; $\gamma = 27{,}4$.

Filipjev's formula :

0	40	252	492	M	4552
28		60	68	72	32

4724 µ.

♀ : 4,224 mm; $\alpha = 58{,}6$; $\beta = 7{,}27$; $\gamma = 19{,}2$; V. = 65,3 %.

Filipjev's formula :

0	36	100	300	580	2760	3680	3904	4004
32			56	68	72		40	36

4224 µ.

Specimens *M. denticaudatus* S. S. and Adam (1931).

Dimensions :

♂ : 5 mm; $\alpha = 64$; $\beta = 8{,}33$ (not 18,8 like stated in that description) $\gamma = 26{,}6$.

♂ : 5,72 mm; $\alpha = 63{,}8$; $\beta = 9$; $\gamma = 25{,}6$ (not 31,9 like stated by S-S and Adam) V. = 69,39 %

♀ : 6,9 mm; $\alpha = 62{,}8$; $\beta = 9{,}9$; $\gamma = 20{,}9$; V. = 65,8 %.

In De Rouville's *O. albidus* which is a synonym of *M. pristiurus* (Zur Strassen) the male measured 5,3 mm, which falls in the same range of variation of the present species.

Like easily may concluded from the foregoing not only the dimensions from the specimens from De Rouville (1904) but also those of S. S. and Adam (1931) of De Man (1878), as well as the present specimens fall into the range of variation of the species first described by Zur Strassen as *O. pristiurus* Zur Strassen. And similar conclusions are allowed in respect with Cobb's (1932) specimens from the Atlantic Coast of North America, where males and females likely attain a length from about 5,6 mm and for which Cobb did assume the synonymity with the specimens from the Mediterranean. Now I have been able to observe specimens from the Mediterranean, also from similar habitats as those studied by De Rouville (Cette) and Zur Strassen (Naples) I am still more convinced that the synonymizing from *M. denticaudatus* with *pristiurus* is justified by the facts and I do not agree with Kreis (1934), who is of the opinion that the structure of the male tail as well as the amphids speak in favour of the distinctness of *M. denticaudatus* S. S. and Adam.

Therefore in order to bring new evidence that my last conclusion was correct I may give a redescription of the female, illustrated by new figures from this interesting species. Head rounded anteriorly with distinct lips, provided with minute lapial papillae. Cephalic setae at a level with the apex of the longer subventral tooth, 10 in number, the longer ones 31 %, the shorter 26 % of the corresponding diameter (in the Belgian specimens these measurements were 30 and 27 % of the corresponding diameter respectively). Amphids cup-shaped to more circular, apparently dependent on the state of fixation, at a level with the shorter buccal teeth, which are connected with each other by means of a curved cuticular rim. Longer subventral tooth 77-82 % of the length of the buccal cavity, shorter teeth 64-74 % of that distance in the female sex. Between the base of the buccal cavity and the excretory pore which is separated in the female sex by a distance of 2,5 times the length of the buccal cavity from the anterior end (2,43 times in the Belgian specimens) we find some setae, apparently placed more or less in longitudinal rows. Female tail 5,8 times as long as the anal diameter. The osmosium is situated halfways the intestinal efferent of the De Maniansystem, i.e. in a similar situation as depicted by Cobb (1932) for his *M. pristiurus* (confer fig. 26 with Cobb's figure 1). The male tail was not so strongly curved as in Cobb's males, but this certainly depends on the mode of fixation, since we may observe also differences in this respect between specimens of the same habitat [confer Plate V, fig. 7 and 8, S. S. and Adam (1931)]. The tail of our specimens is provided with 8 sawteethlike prominences and 7 setae, whereas the present specimens present, just like those from Belgium, the ones studied by De Rouville (1904) and those depicted by Cobb (1932) 4 praeanal setae of which the foremost is separated from the other 3 by a larger

distance than do separate the latter 3 from each other. Spicules 11 times as long as the anal diameter (just as in the Belgian males) (in Cobb's males the spicules were 9 times as long as the anal diameter). Length of the male tail 5 anal diameters. Similar relations were observed in specimens from Belgium. So I am sure that my former conclusions remain correct.

Geographical distribution : Helgoland, Belgium, Mediterranean, Banyuls-sur-Mer, Villefranche, Cette, Naples, Atlantic Coast of the U.S.A. Woodshole. Allgén (1941) has found the species in question in Bandirma, Sea of Marmara.

27. — **Metoncholaimus demani** (Zur Strassen, 1894).

(Fig. 27, A-E.)

8 ♂♂, 4 ♀♀, 41 juv. from Villefranche, « Baie de Lilong », sand. Depth 3 m.

De Man (1878), Zur Strassen (1894) as well as Filipjev (1918-1921) have described this species, which is closely related to *M. pristiurus* (Zur Strassen) from which it may be distinguished easily in the female sex by the fact that the osmosium of the Demanian system is placed almost at the proximal end of the intestinal efferent duct, whereas it is situated in the middle of that efferent in *pristiurus*. The male of *M. demani* has a tail, provided with subventral setae, whereas *pristiurus* presents apart from the mentioned setae a number of ventromedian teeth.

Dimensions :

♂ : 5,44 mm; $\alpha = 68$; $\beta = 8,07$; $\gamma = 24,7$.

Filipjev's formula :

$$\frac{0 \quad 40 \quad 104 \quad 300 \quad 620 \quad M \quad 4780 \quad 5220}{36 \qquad\qquad 68 \quad 76 \quad 80 \qquad\quad 48} \quad 5440\ \mu.$$

Dimensions :

♀ : 5,68 mm; $\alpha = 57$; $\beta = 8,7$; $\gamma = 24,4$; V. = 68,1 %.

Filipjev's formula :

$$\frac{0 \quad 48 \quad 88 \quad 308 \quad 648 \quad 3868 \quad 4968 \quad 5328 \quad 5448}{36 \qquad\quad 72 \quad 80 \quad 100 \quad 76 \qquad\quad 48} \quad 5680\ \mu.$$

De Man's :

♂ : 5,55-5,60 mm; $\alpha = 66$-66,1; $\beta = 10,3$-9,3; $\gamma = 28,3$-30,4.

3 ♀♀ : 6,48, 6,59, 7,45 mm; $\alpha = 75,4$, 80,3, 77,6; $\beta = 10,6$, 10,8, 11,8; $\gamma = 28,5$, 30, 28; V. = 68,3, 67,4, 70,8 %.

Filipjev's :

♂ : 6,7 mm; $\alpha = 70$; $\beta = 11$; $\gamma = 35$.

♀ : 6,7 mm; $\alpha = 63$; $\beta = 11$; $\gamma = 48$; V. = 63,5.

A comparison of the foregoing data proves, that the dimensions of the specimens observed by De Man and me fall in the same range of variation. Those of Filipjev distinctly deviate from the general trend, especially in respect

with the comparative length of the tail which is distinctly shorter in the Black Sea females than in ours. Moreover we find a distinct praeanal wart in FILIPJEV's female and a rather obvious gubernaculum, that I miss in my specimens and is likewise not depicted by DE MAN in his, that makes me doubt if FILIPJEV's specimens are conspecific with mine and those of DE MAN.

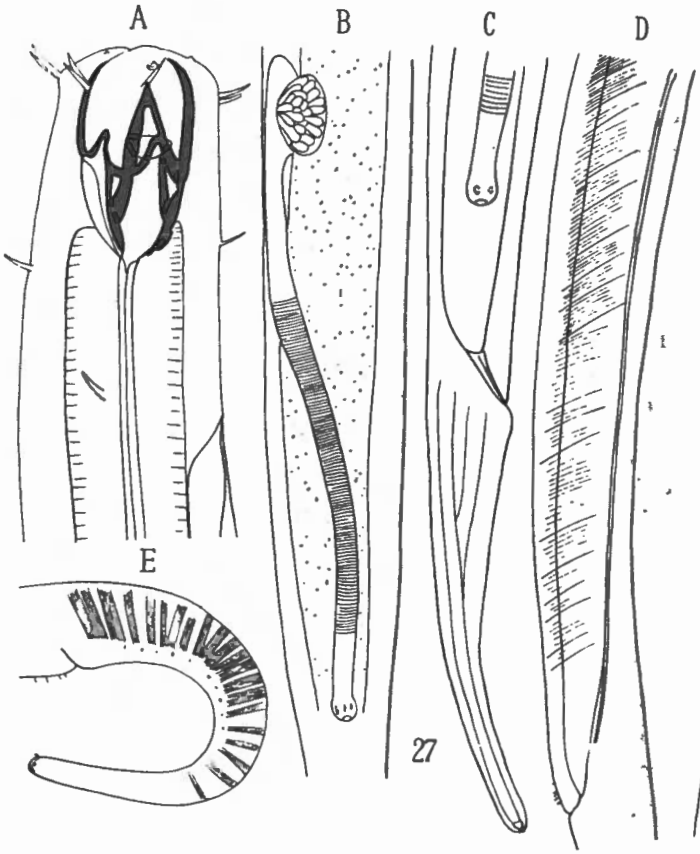


FIG. 27.
Metoncholaimus demani (ZUR STRASSEN).
A : Female head. B : Demanian system.
C : Female tail. D : Male genital armature.
E : Male tail.

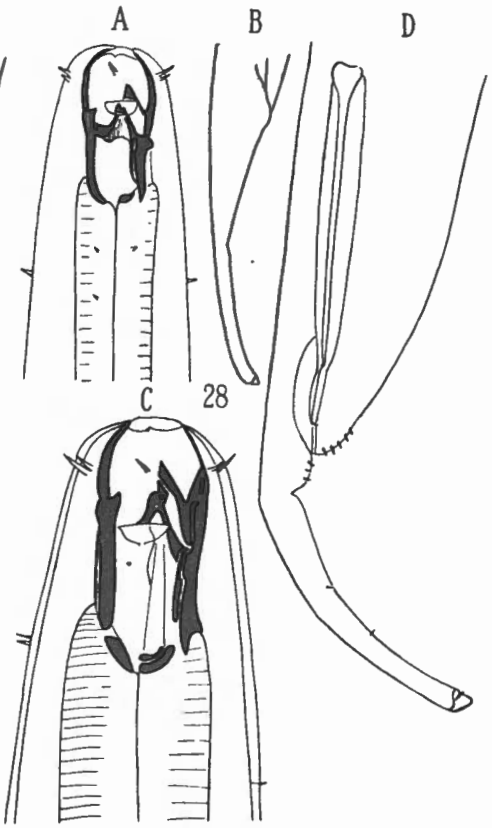


FIG. 28.
Prooncholaimus mediterraneus
SCHUURMANS STEKHOVEN.
A : Female head. B : Female tail.
C : Male head. D : Male tail.

Head rounded anteriorly, slightly set off from the remainder of the body. Lips with distinct although not very prominent labial papillae. Cephalic setae comparatively thick and stout; the longer submedian setae measure 26 %, the shorter 22 % of the corresponding cephalic diameter. The longer subventral tooth reaches till slightly in front of the cephalic setae or to 83,5 % of the buccal cavity, which is twice as long as its greatest width, the shorter teeth measure 61,5 % of the length of the buccal cavity. Some short and thick setae are found in the oesophageal region of the body. Amphids at the level of the shorter teeth,

cupshaped, 25 % of body diameter. Buccal cavity wide, like in *M. pristiurus*, the shorter teeth are connected by means of a strong cuticular rim. Excretory pore at 1,76 times the length of the buccal cavity from the anterior end of the body, in FILIPJEV's male at 2,75 times this distance. Nerve ring in the male almost halfways the oesophageal length, in the female in question at 47,4 % oesophageal length from the anterior border. Spicula long, outstretched, not knobbed at the proximal end, 8 times as long as the anal diameter. There are 5 praeanal setae along the medioventral surface of the body, whereas the curved tail presents 11 pairs of minute postanal setulae and a small seta near its apex. Female tail gradually tapering with its distal 3/7 more or less cylindrical; length of tail 5,6 times the anal diameter. Osmosium of the intestinal efferent situated almost at the apex of the efferent. Length of male tail 6 times as long as the anal diameter.

In the present species the pores of the Demanian system are separated from the anal opening by a distinctly greater distance, i.e. more than twice the anal diameter, than in *albidus* BASTIAN, where this distance is not yet quite one anal diameter. In this respect the present species is in accordance with the data of FILIPJEV (1918-1921). A revision of the Black Sea material in respect with the mentioned differences is necessary, because I am not quite convinced that FILIPJEV's *demani* is conspecific with mine. My specimens however undoubtedly belong to the same species as was found in the Bay of Naples both by DE MAN (1878) and by ZUR STRASSEN (1894).

GEOGRAPHICAL DISTRIBUTION : Mediterranean, Naples, Villefranche.

After what may be concluded from the rather incomplete figures made by DE ROUVILLE (1904) and found in the bequest of the late DE MAN I come to the conclusion that one of the males observed by DE ROUVILLE at Cette likewise did belong to *M. demani* ZUR STRASSEN. Its occurence in the Black Sea remains doubtful.

Genus PROONCHOLAIMUS MICOLETZKY, 1924.

28. — **Prooncholaimus mediterraneus** SCHUURMANS STEKHOVEN, 1943.

Syn. *Pr. megastoma* MICOLETZKY nec EBERTH.

(Fig. 28, A-D.)

1 ♂, from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

1 ♀, 2 juv. from Villefranche, « Baie de Lilong », sand. Depth 5 m.

Dimensions :

♂ : 3,796 mm; $\alpha = 31,6$; $\beta = 6,4$; $\gamma = 29,6$.

FILIPJEV's formula :

$$\frac{0 \quad 48 \quad 88 \quad 308 \quad 568 \quad M \quad 3668}{32 \qquad\qquad 100 \qquad\qquad 120 \quad 40} \quad 3796\ \mu.$$

Dimensions :

♀ : 3,676 mm; $\alpha = 27{,}8$; $\beta = 6{,}9$; $\gamma = 17{,}6$; V. = 73,1 %.

FILIPJEV's formula : $\frac{0 \quad 48 \quad 300 \quad 528 \quad 2688 \quad 3468}{36 \qquad\qquad 120 \quad 132 \quad 44}$ 3676 µ.

Juv. FILIPJEV's formula : $\frac{0 \quad 32 \quad 232 \quad 432 \quad 2172}{42 \qquad 52 \quad 6472 \quad 40}$ 2332 µ.

Dimensions :

Length juv. : 2,332 mm; $\alpha = 32{,}4$; $\beta = 5{,}4$; $\gamma = 14{,}2$.

megastoma MICOLETZKY, Naples :

♂ : 3,6 mm; $\alpha = 40$; $\beta = 5{,}7\text{-}7{,}3$; $\gamma = 19\text{-}21$ (doubtful if belongingto the same species as that of Villefranche (Confer relative dimensions).

♂ : 2,9 mm; $\alpha = 25$; $\beta = 6{,}5$; $\gamma = 20{,}6$ (α and β not differing very much, apparantly the same species as that of Villefranche).

♀ : 3,3 mm; $\alpha = 27$; $\beta = 6{,}9$; $\gamma = 19$; V. = 75 %, same species as that of Villefranche.

Unfortunately MICOLETZKY (1923) has given neither figures nor extensive data about his specimens. Therefore it is not possible to be absolutely certain about the identity of his specimens. It would interest me particularly to know the relative dimensions of the buccal cavity of his specimens and how this is divided into two portions by the cuticular band from which the smaller teeth originate. I am however of the opinion, that apart from his variety *neapolitana*, of which only very incomplete data are known, MICOLETZKY apparently has met with the true *megastoma* and with the same species, which I have studied after the Villefranche material, which I might name *Pr. mediterraneus*.

Head rounded anteriorly with 6 lips and indistinct papillae. Cephalic setae 10 in number, the longer ones measuring 16 % of corresponding cephalic diameter, the shorter ones no longer than 12 % of the same diameter, in the male whereas the same setae measure 17 % and 10 % of the corresponding diameter respectively in the female.

Amphidial opening 27,1 % of the corresponding body diameter in the male, 30 % of the same in the female, cupshaped and in this respect differing from that of *eberthi*, which is almost circular (due to differences in fixation) [confer my paper on freeliving nematodes from Alexandria (1943)].

Buccal cavity large in the male, 2,5 times as long as its greatest width (L. = 3 × width in male from Nice, L. = 2,37 × width in *Prooncholaimus eberthi*). The buccal cavity is subdivided into 2 separate cavities, the relative length of which is in the male sex = 1 : 2, in the female sex = 2 : 3, whereas in the *megastoma* type the relation of both portions = 1 : 1 (male) and in the female of *eberthi* = 1 : 1,1, so that there exists a distinct difference between *megastoma* type and our species. The dimensions of the teeth, of which the large

subventral tooth reaches to the level of the cephalic setae in our species as well as in the species *eberthi* are as follows compared with the female of *eberthi* :

Species	Left subventral tooth	Right subventral tooth	Dorsal tooth
eberthi ♀	37	25	25
mediterraneus ♀	36	30	30
♂	38	32	32

Longer subventral tooth 84 %, lower subventral tooth and dorsal tooth 68 % of the length of the buccal cavity in the male of our species.

The oesophageal portion of the body further bears some short setae. The excretory pore is found in our male at 1,83 times the length of the buccal cavity from the anterior end.

Nerve ring like in *eberthi*, not like in *megastoma* Eberth, i.e. in the male of Villefranche at 53,1 %, in the female of the same habitat at 49,2 % of the oesophageal length, in Eberth's specimen at 43,1 % of the oesophageal length and in the species *eberthi* on 49,2 % of the oesophageal length.

Vulva at almost the same spot in all 3 species.

Female tail not swollen at its apex, gradually narrowing, its distal half almost cylindrical, 5,2 times as long as the anal diameter, width at the apex 0,26 × anal diameter.

Spicula long, straight, swollen at the proximal end and provided with a distal prolongation, just as in the spicula of *eberthi*, as long as the tail, which measures 6,6 anal diameters. The spicules are just as in that species, surrounded by the protractores spiculi. Gubernaculum 15 % of the length of the spicula. In Eberth's male the spicules measured 75 % of the tail length, i.e. 3,7 anal diameters whereas the tail itself is 5,28 anal diameters long; width at the tip 0,28 anal diameter.

In the Villefranche male the tail length equals 6,6 the anal diameters, width at the apex 0,41 anal diameter.

Male of *eberthi*, tail 4,3 times as long as anal diameter, width at apex 0,33 anal diameter. The male tail therefore is neither in accordance with that of *megastoma* nor with that of *eberthi*.

Female tail in *megastoma* 4,55 anal diameters; width at apex, which is distinctly swollen, 0,22 anal diameter.

Female tail in *eberthi* 3,5 anal diameters; width at apex 0,2 anal diameter.

Female tail in the Villefranche female 4,3 anal diameters; width at apex 0,24 anal diameter.

The female tail resembles therefore more that of the female *megastoma* than the male does in respect with the male *megastoma*, as likewise the division of the buccal cavity of the female is more in accordance with that of *megastoma* than that of the male.

The attenuation of the body to the anterior is 3,6 in the Villefranche male and 2,55 in the male of *eberthi*, and similarly 3,66 in the female of Villefranche, whereas it is 2,72 only in the *eberthi* female.

In the male we find round the cloaca a series of cloacal setae 5 in front of the anus and 4 posterior to the anal cleft, futher there are 2 widely separated subventral hairs and a subventral apical seta. This pilosity is not quite the same, although very similar to that indicated in the key of MICOLETZKY (1924) for *megastoma* (EBERTH). So I come to the conclusion that probably, what MICOLETZKY thought to be the typical *megastoma* is at least in part identical with the species of Villefranche.

Now *Prooncholaimus mediterraneus* may be distinguished from *eberthi* by the structure and division of the oral cavity and the length of the tail in the attenuation of the oesophageal portion of the body, whereas the species in question differs from *megastoma* proper by the structure and division of the buccal cavity, the position of the nerve ring, the longer spicula as well as by the longer tail, which is less attenuated in the male sex of our species than in the male sex of *megastoma*.

GEOGRAPHICAL DISTRIBUTION : Villefranche, Naples, Suez, Alexandria.

Genus VISCOSIA DE MAN, 1890.

29. — Viscosia glabra (BASTIAN, 1865).

(Fig. 29, A, B.)

7 ♀♀, 4 juv. from Villefranche, « Baie de Lilong », sand. Depth 5 m.

7 ♀♀, 4 juv. from Villefranche off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

3 ♂♂, 1 ♀, 1 juv. from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus. Depth 3 m.

This is one of the most frequently observed species in the Mediterranean. It was likewise observed by MICOLETZKY (1923) in many localities, in the Adria, near Naples and in Suez. It occurs also in Alexandria.

The dimensions of my specimens are quite in accordance with those of MICOLETZKY for the same habitat. It is superfluous to give a redescription of this wellknown species and I will only give a figure of the female head and tail end.

GEOGRAPHICAL DISTRIBUTION : From the Baltic to the Black Sea. Recently also in the Öresund, further Tarva, Banyuls-sur-Mer, Camargue.

30. — Viscosia elongata Filipjev, 1922.

(Fig. 30, A-C.)

1 ♂, from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus. Depth 3 m.

This species was first described by Filipjev after a female from the Black Sea, Anatolia, so that the male is new to science. This male is closely related to *V. cobbi* Filipjev (1918) when its genital armature is compared with the genital armature of that species.

Dimensions :

♂ : 2,72 mm; $\alpha = 85$; $\beta = 5{,}6$; $\gamma = 19{,}4$.

Filipjev's formula :

$$\frac{0 \quad 16 \quad 200 \quad 480 \quad M \quad 2520}{20 \qquad\qquad 32 \quad 28 \quad 28} \quad 2720\ \mu.$$

Filipjev's female :

2,45 mm: $\alpha = 100$; $\beta = 6{,}5$; $\gamma = 18$.

Head distinctly set off from the rest of the body by a constriction of the body wall. Papillae labiales not seen, probably because there is a slight invagination of the anterior portion of the lips (confer the forward position of the cephalic setae, such due to fixation). Cephalic setae short 12,5 % of the corresponding body diameter, also distinctly shorter than in the female, observed by Filipjev, where they measure about 25 % of the corresponding diameter. Amphids rather large, cup-shaped, their opening 48 % of the corresponding diameter, therefore much larger than in the female, where the amphid is minute. This is in so far not remarkable since there exists in the closely related *Viscosia cobbi* a remarkable difference in the size of the amphids between both sexes, those in the male being extraordinary large, which brings a new argument for the fact that the species are closely related. Buccal cavity strengthened by rather thick walls, the large subventral tooth reaching almost to the level of the cephalic setae, 12,5 μ long, smaller teeth reaching to the attachment of the larger tooth to the subventral wall, 7 μ long (in the female the large tooth measures 16 μ, the smaller teeth 9 μ). Here however the interrelations are similar to that in our male, in which the buccal cavity is 2,4 times as long as wide. The buccal cavity of Filipjev's female is 1,9 times as long as wide.

Nerve ring in front of the middle just as in the female. Spicule sword-shaped 1,4 anal diameter long, although less slender than in *cobbi*. Just as in *cobbi* there are some subventral pairs of cloacal setae, 1 praeanal, 3 postanal, whereas in *cobbi* 3 pairs are praecloacal and 1 postcloacal. Tail gradually tapering, then more or less cylindrical, slightly swollen at the extreme apex.

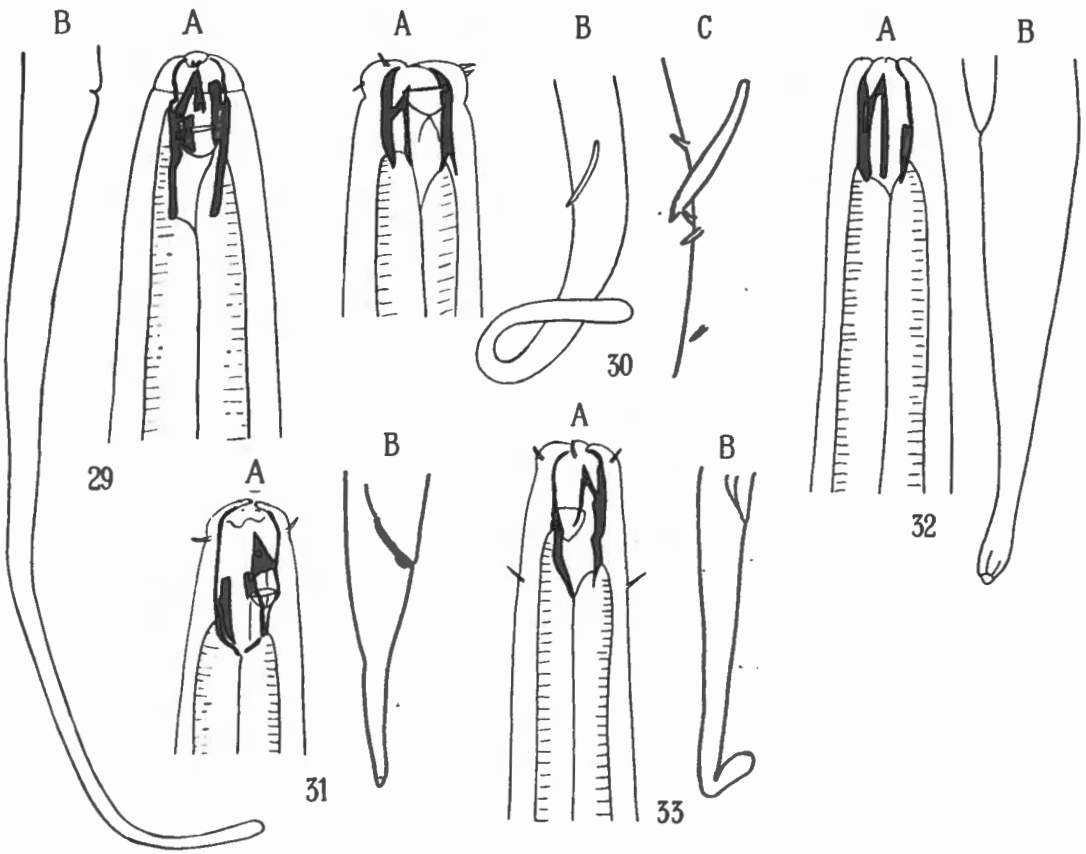


FIG. 29. — *Viscosia glabra* (BASTIAN).
A : Male head.
B : Tail.

FIG. 30. — *Viscosia elongata* FILIPJEV.
A : Male head. B : Male tail.
C : Male genital armature.

FIG. 31. — *Viscosia brachylaima* FILIPJEV.
A : Male head. B : Male tail.

FIG. 32. — *Viscosia macrorhopalocera* KREIS.
A : Female head. B : Female tail.

FIG. 33. — *Mononcholaimus elegans* KREIS.
A : Juvenile head. B : Tail.

Tail almost 7 anal diameters long, width at apex 0,41 anal diameter. In the female, studied by FILIPJEV, the length of the tail was 9 anal diameters, width at extreme apex 0,7 anal diameter.

GEOGRAPHICAL DISTRIBUTION : Black Sea, Mediterranean, Villefranche.

From *Viscosia cobbi* FILIPJES the male in question may be distinguished by its much smaller size and by the different arrangement of the cloacal setae.

31. — Viscosia brachylaima Filipjev, 1925.

(Fig. 31, A, B.)

1 juv. from Villefranche, « Baie de Lilong », sand. Depth 3 m.
1 ♂, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

Dimensions :

♂ : 1,7 mm; $\alpha = 42,5$; $\beta = 5,1$; $\gamma = 17$.

Filipjev's formula :

$$\frac{0 \quad 24 \quad 188 \quad 328 \quad M \quad 1600}{16 \quad\quad 32 \quad 40 \quad 40 \quad 20} \quad 1700\ \mu.$$

Juv. Length : 1,516 mm; $\alpha = 54,1$; $\beta = 4,67$; $\gamma = 12,6$.

Filipjev's formula :

$$\frac{0 \quad 16 \quad 176 \quad 316 \quad M \quad 1396}{16 \quad\quad 28 \quad 28 \quad 28 \quad 20} \quad 1516\ \mu.$$

Filipjev's females :

2,25-2,57 mm; $\alpha = 33-47$; $\beta = 5,5-6$; $\gamma = 13,5-25$. Tail 4-4,5 anal diameters, width at apex 0,44-0,47.

Until now the female only was known by Filipjev from the Murman Coast from a depth of 15-16 m.

Head elongate, rounded anteriorly, with 6 lips, with as many papillae, cephalic setae 25 % of the corresponding body diameter. Amphids comparatively small, 30 % of the corresponding diameter, situated slightly posteriorly to the apices of the smaller teeth. Buccal cavity elongated, 2,9 times as long as it is wide. Large subventral tooth reaches to the level of the cephalic setae, 16 µ long, smaller teeth 12,8 µ. Nerve ring 57,1 % of the oesophageal length. Spicula almost 1 anal diameter long. Gubernaculum short, membranaceous. Tail 5 times as long as its width at the base.

Geographical distribution : Murman Coast, Mediterranean.

32. — Viscosia macrorhopalocera Kreis, 1932.

(Fig. 32, A, B.)

1 ♀, from Villefranche, grey mud (between the « Lazareth » and « Anse Passable). Depth 50 m.

Dimensions :

♀ : 1,140 mm; $\alpha = 31,6$; $\beta = 4,9$; $\gamma = 14,2$; V. = 51 %.

Filipjev's formula :

$$\frac{0 \quad 20 \quad 140 \quad 232 \quad 580 \quad 1060}{16 \quad\quad\quad 28 \quad 36 \quad 20} \quad 1140\ \mu.$$

Juvenile after Kreis :

0,982 mm; $\alpha = 37,8$; $\beta = 5,1$; $\gamma = 14$; V. = 61,5 %.

The female in question, new to science, is characterised by the presence of minute cephalic setae, situated at the anterior border of the lips, which are not sharply set off from the rest of the body. Amphid not seen, nor by me, neither by KREIS. Buccal cavity elongate, more or less cylindrical, almost thrice as long as it is wide, provided with a long, sharply pointed ventral tooth, however not quite reaching to the level of the setae. Dorsal tooth reaching halfways the length of the buccal cavity. Nerve ring at 60,3 % of the oesophageal length. Ovaria double. Tail elongate conical, swollen at the apex, 4,4 times as long as its anal diameter. Length of apical club not quite 1/5 of the tail length. Width at apex 0,31 of anal diameter.

GEOGRAPHICAL DISTRIBUTION : Javasea, Villefranche.

The species in question closely resembles *V. minor* and *V. palmæ* S. S. but differs from the latter by the shorter cephalic setae and the minor length of the dorsal tooth.

Genus MONOCHOLAIMUS KREIS, 1924.

33. — **Mononcholaimus elegans** KREIS, 1924.

(Fig. 33, A, B.)

3 juv. from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus. Depth 20 m.

Length juv. :

2,06 mm; $\alpha = 64,4$; $\beta = 6,4$; $\gamma = 14,7$. Tail 7,5 A.D. apex 0,5 A.D.

FILIPJEV'S formula :

$$\frac{0 \quad 20 \quad 180 \quad 320 \quad \quad 1920}{16 \quad \quad 32 \quad 32 \quad 32 \quad 20} \quad 2060\ \mu.$$

The juveniles of this species resemble most *M. elegans* KREIS to which I think it will be correct to bring the specimens in question. Head rounded anteriorly, provided with 6 setae measuring 26 % of the corresponding body diameter; besides some other setae next to the basal end of the buccal cavity, which is 3,5 times as long as its width. Large subventral tooth reaching to the level of the cephalic setae. Amphids pouch-shaped, distinct, opening of the same 1/3 of the corresponding cephalic diameter, opposite to the base of the dorsal tooth. Tail elongate, gradually tapering, with extreme apex slightly swollen. 7,5 times as long as its anal diameter. Apex half as wide as the anal diameter.

GEOGRAPHICAL DISTRIBUTION : Bretagne, Trébeurden, Malayan archipelago, Villefranche, Camargue.

Family ENCHELIDIIDÆ.

Genus BOLBELLA Cobb, 1920.

34. — Bolbella hexabulba Filipjev, 1918-1921.

(Fig. 34, A, B.)

1 ♀, from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

Length : 3,49 mm; $\alpha = 62,2$; $\beta = 4,77$; $\gamma = 21,8$; V. = 55,2 %.

Cobb's formula :

$$\frac{0 \quad 20 \quad 80 \quad 352 \quad 772 \quad 1932 \quad 3332}{8 \qquad\quad 44 \quad 48 \quad 56 \quad 40} \quad 3492\ \mu.$$

The specimen in question is apparently a juvenile female, the vulva of which was not very pronounced. It could be identified with some difficulty only.

Head bluntly truncated anteriorly. Cephalic setae, 6 in number, 31,4 % of the corresponding cephalic diameter, attached to the body wall opposite to the apex of the dorsal tooth. Amphids not seen. Oral cavity rather wide. A narrow vestibulum connects the cavity with the exterior. The oral cavity str. s. is subdivided into 3 distinct portions, part 1 and 2 enclosing a more or less oval space, part 3 being sack-like. The walls of the oral cavity are strongly cuticularized, especially those of the first two subdivisions. One of the two subventral teeth is very prominent, measuring 73 % of the total length of the oral cavity. Dorsal tooth inconspicuous. Posterior to the oral cavity, the usual birefringent corspuscle, embedded in the oesophageal tissue, is observed. No true ocelli visible, but a distinct pigmentspot, occupying almost the whole width of the oesophageal cylinder at a distance equal to twice the length of the oral cavity from the anterior end of the body. Oesophagus with 5 bulbi.

Excretory pore at a distance equal to 2,45 times the length of the oral cavity from the anterior body end. Nerve ring at 48,1 % of the total oesophageal length. Cuticle smooth, almost devoid of setae, except a few near the anterior body end. Tail gradually tapering to the more or less fingershaped posterior portion, which occupies 33,4 % of the total length of the tail which is 3,7 the anal diameters long. Anus prominent. Posterior attenuation of the tail 7,5.

Bolbella hexabulba differs from *Bolbella cobbi* Micoletzky from the Mediterranean by the more anterior position of the excretory pore. Its position is even more forward than in the allied *B. tenuidens* Cobb, where the excretory pore is situated at a distance from the anterior end, equal to 3 times the body diameter at a level of the pore. Here this distance is twice as long as the

corresponding body diameter. Moreover the number of oesophageal bulbi is 8 in *tenuidens*, whereas there are 6 bulbi of equal size in *B. cobbi*. Like in *B. cobbi* the posterior body end bears no setae.

GEOGRAPHICAL DISTRIBUTION : Black Sea, Sebastopol, Mediterranean, Villefranche.

Genus PAREURYSTOMATINA MICOLETZYK and KREIS, 1922.

35. — **Pareurystomatina tenuicauda** n. sp.

(Fig. 35, A-E.)

1 ♀, 1 ♀, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.
Length, ♂ : 3,192 mm; $\alpha = 44$; $\beta = 4,5$; $\gamma = 11,4$.

FILIPJEV'S formula :

0	12	320	700	M	2580	2712	2912	3192 µ.
		60	76	72			48	

The species is characterized by the long tail with a filiform portion, that occupies 58 % of the whole tail length and is provided with some short setae. Tail 5,92 anal diameters long. Spicula long, curved, bluntly pointed at their distal end, slightly narrowed at their proximal end. Nerve ring at 45,5 % of the oesophageal length. Spicular chord 1,78 anal diameters long. Gubernaculum embracing the distal end of the spicula, provided with a dorsal prolongation, which is 0,64 times as long as the anal diameter. First praeanal sucker 4,3 anal diameters from the anal opening, the second praeanal sucker 3 anal diameters in front of the first. The relation between both distances = 1 : 1,44.

Posterior attenuation 14.

The corresponding female measures :

Length, ♀ : 2,036 mm; $\alpha = 3,4$; $\beta = 3,3$; $\gamma = 11,8$.

FILIPJEV'S formula :

0	12	284	604	1104	1864	2036 µ.
8		40	52	60	32	

Head rounded anteriorly, separated from the neck by a distinct constriction. Cephalic setae rather long, as long as the corresponding cephalic diameter. Buccal cavity not very deep, 2,35 times as long as its greatest diameter. Cervical setae not longer than 33 % of the corresponding body diameter. Excretory pore not seen.

Nerve ring at 47 % of the oesophageal length. Tail almost as in the male, but slightly less effilated than in the latter, 7,5 anal diameters long. Attenuation 15.

From *Pareurystomatina typicum* MICOLETZKY the species at once may be distinguished by its more effilate, flagelliform tail.

Genus EURYSTOMATINA Filipjev, 1918.

36. — **Eurystomatina ornatum** (Eberth, 1863).

(Fig. 36, A, B.)

1 ♀, from Villefranche, off the « Vieux Villefranche », black mud and organic detritus. Depth 20 m.

Eurystomatina ornatum is said to occur in the Mediterranean at several localities. After Micoletzky (1923) it should occur in the Adria as well as in the neighbourhood of Suez. De Rouville (1904) states to have found it at Cette. Now we have to bear in mind that Micoletzky did synonymize with *E. ornatum* : *E. tenue* Marion, *E. assimile* De Man and *E. filiforme* De Man.

Filipjev (1918-1921) however did not go so far. He separated *E. ornatum* Eberth which is after him synonymous with *E. tenue* Marion from *E. assimile* De Man with which *E. filiforme* De Man should be conspecific.

Among a collection of Nematodes from Alexandria I found some males, which I consider to be conspecific with *E. assimile* De Man. During the study of these males I came to the conclusion that Micoletzky did likewise meet with this species at Suez and further that *E. ornatum* and *E. assimile* are distinct.

At the present moment the genus *Eurystomatina* is still in great confusion. This is partly due to the fact that specimens of *Eurystomatina* are comparatively rare. During the preparation of his monograph of the freeliving marine nemas of North Sea and Baltic Schuurmans Stekhoven came to the conclusion that *E. filiforme* should be synonymous with *E. assimile* De Man after Filipjev from the Black Sea but not with *E. assimile* De Man from Naples.

Having now to my disposition a more extensive material I have changed my opinion and think that Filipjev's *assimile* might be conspecific with De Man's type.

A thorough comparison of the present female with the figure Eberth has given from his type of *E. ornatum* and an accurate reading of Eberth's description convinced me that the present female has to be reckoned to *E. ornatum*. The same fits for Daday's specimens from Fiume.

About the buccal cavity of his species Eberth says literally :

« Pharynx — that is the buccal cavity — ein kurzer mit fester Chitinwand versehener Cylinder, vom schmalen Oesophagus durch seine unten bauchige Partie stärker abgesetzt, sein vorderer Rand leicht gezähnt. Seine Wand bildet nach innen zuerst eine ringförmige Leiste und hinter dieser zwei punktförmige Vorsprünge. An einer Seite erhebt sich ein spitzer Zahn. »

The figure Eberth has given from the anterior portion of the oesophagus clearly indicates that there are 3 crossbands in the oesophagus, which is in accordance with what the present female shows. Moreover the distribution

of the oesophageal pigment is in accordance with my findings on this female of Villefranche, and as for the pilosity this is similar to that in EBERTH's specimen.

The specimen from Villefranche measured :

5,8 mm; $\alpha = 69$; $\beta = 5{,}25$; $\gamma = 48{,}5$; V. = 62 %.

COBB's formula :

$$\frac{0 \quad 20 \quad 40 \quad 360 \quad 1100 \quad 3640 \quad 5680}{20 \qquad\quad 76 \quad 84 \quad 48} \quad 5800\ \mu.$$

Body of the present female tapering in front, anterior attenuation 3,8. Cuticle with some scattered setae, especially at the anterior end. Head bluntly rounded anteriorly, where the lips are crowned with one papilla each, 6 papillae in total. Cephalic setae, 10 in number, inserted just posterior to the labial suture, 75 % of the corresponding cephalic diameter. The smaller setae of each pair 47 % of the longer ones and 27,5 % of the same cephalic diameter. Buccal cavity rather deep and broad, 1,62 times as long as its widest part, subdivided into two inequal portions, of which the posterior is distinctly larger than the anterior portion. Proportions I : II = 13 : 20 = 1 : 1,52. Buccal cavity provided with three rows of bacillary corpuscles.

Eyes with distinct ocelli, provided with cuticular lenses, situated on a distance from the anterior border equal to 1,6 times the length of the buccal cavity. Nerve ring at 34 % of the total oesophageal length. Tail conical, 2,94 times as long as the anal diameter ending with a blunt conical tip. Caudal glands distinct, the cell bodies of these are located anterior to the anal opening.

Since STEINER (1915) gives no figures of his female from Teneriffa it is impossible to state if his specimen was conspecific with the present species. One must however bear in mind that the eyes in STEINER's specimen were shifted distinctly more posteriorad, at 1,92 times the length of the buccal cavity from the anterior end, which feature may point to specific differences. It is however impossible to bring STEINER's specimen with certainty to one of the known species. As for MARION's *E. tenue* this measured 5 mm; $\alpha = 79{,}5$; $\beta = ?$; $\gamma = 38{,}4$. Tail 2,45 anal diameters long. Buccal cavity 1,63 times as long as its greatest width. Eyes at 2,88 times the length of the buccal cavity from the anterior end. Length of cephalic setae 87,5 % of the corresponding diameter. Proportions of the buccal cavity as for its divisions I : II = 1 : 2,7. Length of the male tail 4 anal diameters. Again we must be in doubt just as with STEINER's *filiforme* of Teneriffa, if MARION's male belongs to the same species as EBERTH's *ornatum*. If MARION's figures have been figured to scale than there must be sincere doubt, due to the location of the eyes, the length of the cephalic setae and the proportions of the tail, although we are quite unconsious as to possible sexual differences in this respect. So far however I think it wise not to include *E. tenue* MARION in the synonymy of *E. ornatum*. In

DADAY's male (1901, p. 443) the vulva is situated at about 75 % of the body length therefore in a more backward position than in the present female. Since DADAY's female was not longer than ± 1 mm the identity with our species remains questionable.

MICOLETZKY (1924) at least must have intermingled some species, although there were among these almost undoubtedly some specimens belonging to the present species. Of this we cannot however be quite sure, since this author does not give any figures.

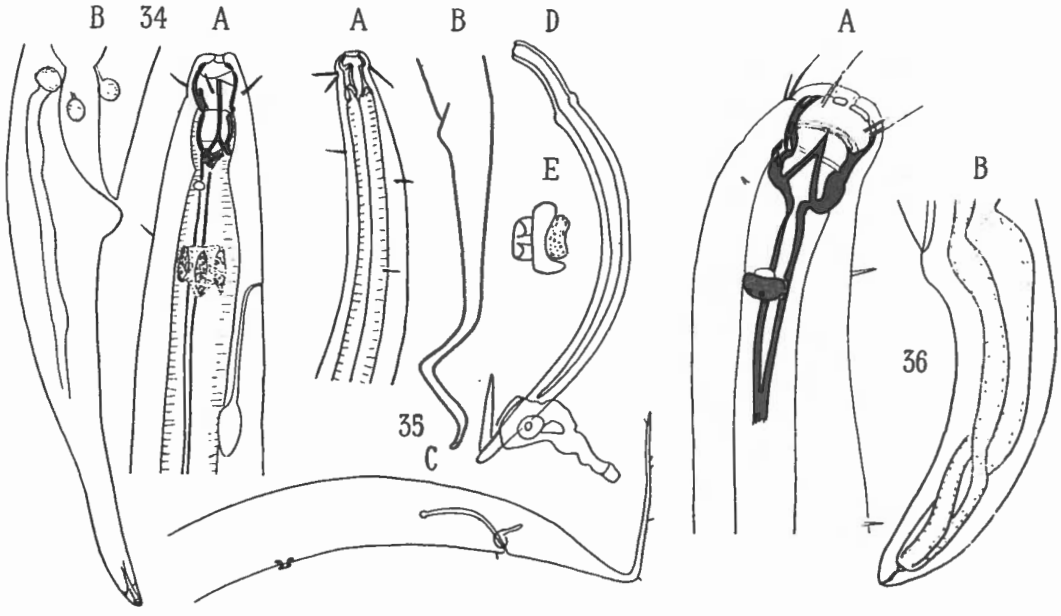


FIG. 34. — *Bolbella hexabulba* FILIPJEV.
A : Female head. B : Tail.

FIG. 35. — *Pareurystomatina tenuicauda* n. sp.
A : Female head. B : Female tail.
C : Male tail. D : Male genital armature.
E : Praeanal papilla.

FIG. 36. — *Eurystomatina ornatum* (EBERTH).
A : Female head. B : Tail.

FILIPJEV's species from the Black Sea differs from the present species i.a. by the shorter cephalic setae, the proportions of the buccal cavity, the situation of the eyes, etc., so that I come to the conclusion that we may state with some certainty that the present species has been found only near Nice, near Villefranche, Banyuls-sur-Mer (ALLGÉN, 1942) and Fiume. ALLGÉN (1940) says to have found it along the Norwegian Coast, Hasvik, Vega, Rognsog. I am not sure that ALLGÉN's specimens from the Sea of Marmara really did belong to the said species.

37. — **Eurystomatina stenolaima** n. sp.

(Fig. 37.)

1 spec. from Villefranche, « Baie de Lilong », sand. Depth 5 m.

The specimen is broken, is closely allied to *E. ornatum* EBERTH but may be easily be distinguished from the latter by the narrower buccal capsule, which is particularly attenuated in its proximal half, as well as by the distribution and structure of the buccal teeth and the absence of eyes or pigment-spots. Length of buccal cavity 20 μ. Nerve ring at 60 μ from the anterior head end, length of oesophagus 500 μ. Bodywidth at the head end 16 μ, at the posterior end of the oesophagus 52 μ.

Body tapering in front, width at anterior end 30,75 % of the width at the posterior end of the oesophagus. Lips distinct, each with a setiform papilla. Cephalic setae rather long and distinct, 10 in number, the longer ones 48 % of the corresponding diameter, the shorter ones 45 % of the same diameter.

Amphids opposite to the posterior portion of the buccal cavity, circular, large, their diameter measuring 23 % of the corresponding body diameter. Cuticle at the anterior portion of the body with some setae, arranged more or less in longitudinal rows. Buccal cavity deep, 2,83 times as deep at its greatest width. Ventral tooth reaching to the upper row of bar-shaped structures, whereas the dorsal tooth is implanted at the level of the second row of bar-like structures. Relation between the lower and upper portion of the buccal cavity = 1 : 2. Excretory pore at a distance equal to 2 times the length of the buccal cavity, with a rather long excretory duct and a distinct ampulla.

Nerve ring at 48 % of the oesophageal length. Length of buccal cavity 4 % of the whole oesophageal length.

In the present specimen no eyes were seen.

From *Eurystoma tenue* MARION the present specimens differs in the size of its ventral tooth which is distinctly longer than in that species and in EBERTH's *E. ornatum*. The same fits for DE MAN's *E. assimile* and for *E. filiforme* DE MAN, which and in this I agree with MICOLETZKY (1923) are synonymous inter se, but neither with *E. ornatum* nor with *E. stenolaimus*. The differences between my specimen and EBERTH's *ornatum* are indicated above. The species in question resembles to *Eurystomatina longicauda* (ALLGÉN), which this author has brought to the genus *Symplocostoma*, differs from it in the less attenuate anterior head end and the shorter cephalic setae.

Genus SYMPLOCOSTOMELLA Micoletzky and Kreis, 1922.

38. — **Symplocostomella mediterranea** n. sp.

(Fig. 38, A, B.)

1 ♀, from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

Length, ♀ : 4,8 mm; $\alpha = 48$; $\beta = 4,86$; $\gamma = 18,7$; V. = 58 %.

Cobb's formula :

0	36	64	384	984	2784	4544	
20			76	92	100	88	4800 µ.

Micoletzky and Kreis (1930) have created a new genus for *Symplocostomella javaensis* with as characteristical features the absence of ocelli and lenses and the presence of a row of small rodlets at the border of anterior and posterior portion of the buccal cavity. These characteristics were likewise observed in the present species.

Head bluntly conical, truncated at its anterior border, the oral opening surrounded by a cuticularised ring. Slightly more posterior 3 of the 6 labial papillae are observed. Cephalic setae opposite to the apex of the dorsal tooth, 10 in number, the paired submedian setae almost equal in length, 31,2 % of the corresponding cephalic diameter. Amphids small, their diameter 13,18 % of the corresponding body diameter, opposite to the posterior fourth of the buccal cavity.

Buccal cavity subdivided into two main portions separated by the described circle of cuticularized rods. Proportion of Part I : II = 1 : 2,8, the space just posterior to this circle of rods being the widest portion of the buccal cavity. Length of the same 2,55 times as long as its widest part. The anterior portion is again subdivided into three subdivisions by means of cuticularized rings, the posterior of which presents two heigher-shaped cuticularizations. The longer of both subventral teeth reaches almost to the level of the crown of rodlets. It is bluntly pointed, whereas the apices of the other teeth are broad-cut. At the base of the buccal cavity the usual birefringent cuticularizations are observed. Neither lenses, nor pigment spots are present. The anterior portion of the body presents irregular rows of rather small and short setae, whereas a group of 3 setae is found near the base of the buccal cavity. Excretory pore on a distance from the anterior end equal to 1,62 times the length of the buccal cavity.

Nerve ring at 39 % of the oesophageal length. Length of the oral cavity 3,65 % of the total oesophageal length. Tail conical tapering to the filiform apex, which occupies 58 % of the total tail length, which equals 3,76 anal diameters. Anus proeminent. From *S. javaensis* Micoletzky-Kreis the present species differs by the more posterior position of the excretory pore, the more truncate head and by the shape of the tail.

Genus ENCHELIDIUM EHRENBERG, 1836.

39. — Enchelidium acuminatum EBERTH, 1863.

(Fig. 39, A, B.)

1 ♂, 1 juv. from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

It is not without some doubt that I bring both specimens, originating from the same habitat to this species. It is a well known fact, to which MICOLETZKY and KREIS (1930) have paid special attention, that in many Enchelidiidae males and females present strong sex dimorphism. This is true for instance for *Catalaimus* and *Enchelidium*, the female of which was long since indicated with the generic name : *Symplocostoma*.

MICOLETZKY and KREIS (1930) think that *E. acuminatum* EBERTH should be considered to be the male of *S. pauli* MARION. If this would prove to be true than *S. pauli* would fall into the synonymy of *Enchelidium acuminatum*. If however MICOLETZKY's observations about *S. pauli* MARION are correct (1923) and if he has not fused, as I suppose he has done, the species *S. marioni* and *pauli* which as to my opinion are distinct, then it is quite sure that our species is not conspecific with *S. pauli*, because the opening of the excretory pore is situated distinctly more forward in MICOLETZKY's species than in the present form. So I am inclined to bring both specimens which I think are conspecific although they show some differences, the value of which cannot be determined with sufficient certainty, to EBERTH's *Enchelidium acuminatum*, because I am convinced that the male in question is conspecific with that of EBERTH's species.

Length of the male in question : 1,276 mm; $\alpha = 79{,}5$; $\beta = 4{,}64$; $\gamma = 31{,}5$.

EBERTH's male : 3 mm; $\alpha = 30$: $\beta = 5$.

COBB's formula of male :

$$\frac{0 \quad 12 \quad 76 \quad 276 \quad 376 \quad 1236}{8 \qquad\quad 16 \quad 14 \quad 8} \quad 1276\ \mu.$$

Juv. lenght : 1,848 mm; $\alpha = 46{,}2$; $\beta = 3{,}32$; $\gamma = 12{,}4$.

COBB's formula :

$$\frac{0 \quad 12 \quad 56 \quad 236 \quad 556 \quad 1708}{6 \qquad 20 \quad 36 \quad 40 \quad 28} \quad 1848\ \mu.$$

Like in all species of *Enchelidium* the male does not possess a buccal cavity. Anterior body end bluntly rounded, the last part more or less cylindrical, followed by a shallow constriction. Head provided with 6 labial papillae and as much rather long cephalic setae, of which the lateral ones measure 67 % of the corresponding cephalic diameter and the submedian ones 60 % of the same diameter. Amphids transverse with a wide slit; diameter of the latter half the width of the corresponding cephalic diameter. Eyes distinct, their pigmentspot at a distance equal to 1,72 times the cephalic diameter at the level

of the cephalic setae posterior to the anterior head end. Anterior portion of the body with some small setae, placed more or less in rows.

Excretory apparatus opening by means of a short excretory duct just posterior to the eyes, at a distance equal to 2,5 times the cephalic diameter at the level of the cephalic setae. End of excretory cell 1,29 times the length of the oesophagus behind the anterior end. In Eberth's male the same value was

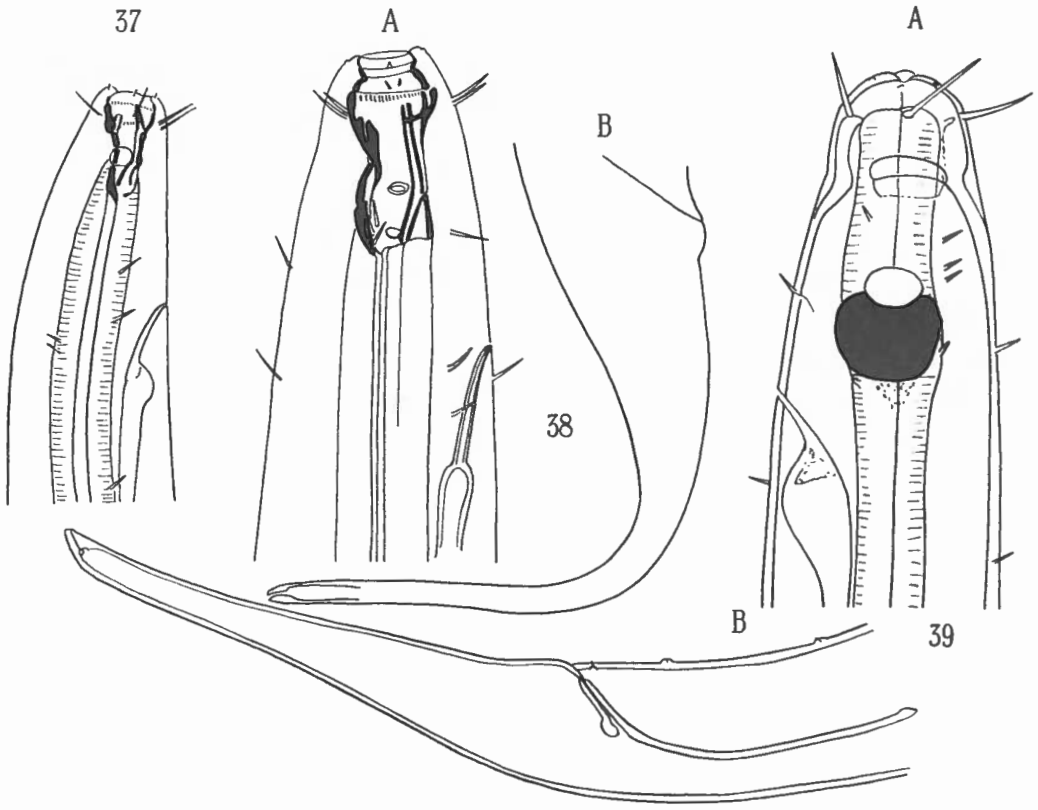


Fig. 37. — *Eurystomatina stenolaima* n. sp. Head end.

Fig. 38. — *Symplocostomatella mediterranea* n. sp. A : Female head end. B : Tail.

Fig. 39. — *Enchelidium acuminatum* Eberth. A : Male head end. B : Tail.

1,32 times the length of the oesophagus. Nerve ring at 27,5 % of the oesophageal length. Tail gradually tapering to a more or less cylindrical portion, which was however less slender than in the figure Eberth has given from the tail of the same species, 4,3 times as long as the anal diameter and ending with a conical tip. Spicula rather slender, curved, 0,64 times as long as the tail, 2,72 times anal diameters long. Gubernaculum small, 0,36 times the anal diameter, provided with a small manubrium at its proximal end. There are seven rather inconspicuous praeanal papillae.

The juvenile specimen differs from the male in that it possesses a distinct buccal cavity, with a long subventral tooth, which distinctly projects into the anterior portion of the buccal cavity and is bluntly truncate.

Apparently there is a small basal tooth at the dorsal side, just as in *S. marioni* after FILIPJEV (1918-1921).

MICOLETZKY (1924) mentions to have found the female of *Enchelidium acuminatum* EBERTH near Suez. This female measured 2,6 mm in length, $\alpha = 45{,}5$; $\beta = 4{,}85$; $\gamma = 19$. End of the excretory cell at 152 % of the oesophageal length, therefore much more caudad than in EBERH's and my male. MICOLETZKY mentions for *E. acuminatum* the presence of 10 cephalic setae, whereas EBERTH distinctly figures 6 cephalic setae only, the same number as my specimen did show. Unfortunately MICOLETZKY (1924) has given no figures so that it is impossible to state the correctness of his observations and if his specimens from the Mediterranean were actually conspecific with those of Suez. I doubt however that *Enchelidium subrotundum* (EBERTH) and *Enchelidium acuminatum* EBERTH are really conspecific like FILIPJEV (1918-1921) and MICOLETZKY believe. So the head of *E. subrotundum* is distinctly swollen anteriorly, the body pilosity seems to be more conspicuous than in *E. acuminatum*, since the body setae are figured by EBERTH as to attain the same length as the cephalic setae, which feature cannot be pure fantasy, since one may be rather certain that EBERTH has composed his figures with great care. And thirdly the gubernaculum of this species although mentioned in the text was certainly less distinct and less strong than in *acuminatum*. So opposite to FILIPJEV and MICOLETZKY I think that both *E. subrotundum* and *E. acuminatum* are good species. *Enchelidium pauli* (MARION) var. *denticulatum* is not conspecific with *E. acuminatum* EBERTH and better should be considered as a separate species, the name of which should be *E. denticulatum*.

GEOGRAPHICAL DISTRIBUTION : Nice, Villefranche, Naples ?, Suez ?.

40. — Enchelidium longicolle FILIPJEV, 1918-1921.

(Fig. 40, A-D.)

1 juv. spec. from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.
1 juv. from Villefranche « Baie de Lilong ». Depth 5 m.

Length of juv. 1 : 1,48 mm; $\alpha = 46{,}2$; $\beta = 3{,}32$; $\gamma = 12{,}4$.

FILIPJEV's formula :

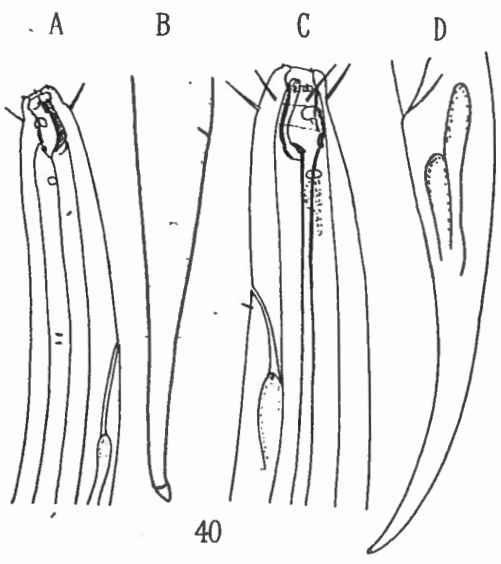
0	12	56	536	556	1708	1848 µ.
6		20	36	40	28	

Length of juv. 2 : 2,644 mm; $\alpha = 44$; $\beta = 4{,}4$; $\gamma = 12{,}9$.

FILIPJEV's formula :

0	16	52	280	600	2440	2644 µ.
12			52	60	36	

Enchelidium longicolle Filipjev was created by Filipjev (1918-1921) as a new species. Now Micoletzky and Kreis (1930) think and in this they are certainly correct, that the females of *Enchelidium* species are shaped as forms belonging to the genus *Symplocostoma*. We do however possess already the species *Symplocostoma longicolle* Bastian of which female as well as male are known. So it is rather certain that the present species has to change its name in the future, as soon as females of this species will be known. Then the present could get for instance the name *Symplocostoma filipjevi*.



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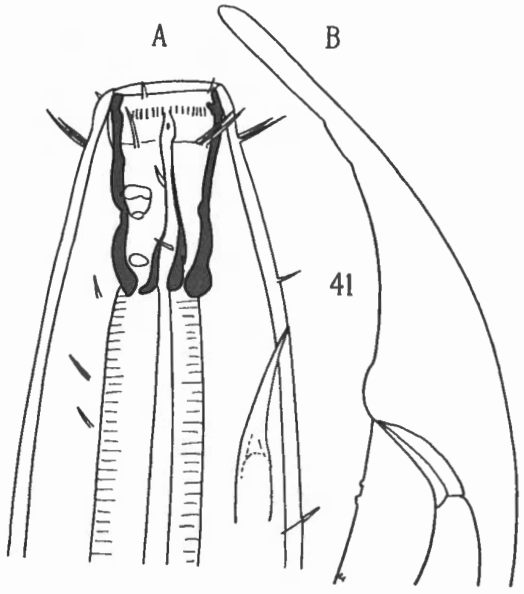

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Fig. 40. — *Enchelidium longicolle* Filipjev.
A : Juvenile head end. B : Tail. C : Juvenile head. D : Tail.

Fig. 41. — *Enchelidium pauli* (Marion).
A : Female head end. B : Tail.

Micoletzky (1923) synonymizes *Symplocostoma tenuicolle* Eberth and *S. longicolle* Bastian after Filipjev. He does not mention however *E. longicolle* Filipjev, the tail of which distinctly differs from the tail of Filipjev's *S. longicolle* in the male as well as in the female sex. I have already pointed to the fact, that as to my opinion Eberth's *Enchelidium tenuicolle* is not identical with *Enoplus* (*Symplocostoma*) *tenuicollis* Eberth, for which I have proposed the name *S. paratenuicolle*, see below. The present specimens should be considered after my opinion as juvenile specimens of Filipjev's *Enchelidium longicolle*.

Head end bluntly truncate, provided with 6 minute labial papillae. Cephalic setae, 6 in number, measuring 58 % of the corresponding diameter in the specimen from Villefranche, even 68 % of the same diameter in the specimen

from Baie de Lilong. Head separated from the body by a distinct constriction. Amphids transverse, elliptical situated in between the first and second portion of the buccal cavity, their width equal to 21,5 % respectively 26,4 % of the corresponding diameter.

The buccal cavity into which a short vestibulum leads and which is thrice as long as its greatest width is divided into 2 unequal parts by a cuticularized ring, which presents at the same time series of longitudinal bars. This ring subdivides the buccal cavity into 2 portions which stay in relation to each other as 1 : 2,85 in both specimens. Just posterior to the buccal cavity there are distinct birefringent bodies in one of the specimens, whereas in the other these birefringent bodies are followed by longitudinal pigmentspots, indicating an ocellus. Some minute setae are to be found at the anterior portion of the oesophagus. Excretory pore at a distance equal to 3,88 times the length of the buccal cavity (Villefranche specimen) or (in the Lilong specimen) equal to 2,95 the same distance from the anterior end, followed by a long duct and a distinct ampulla. Nerve ring at 42,2 % (Villefranche specimen) or 47 % (Lilong specimen) from of the oesophageal length. Tail elongate conical, 5 times as long as its anal diameter.

GEOGRAPHICAL DISTRIBUTION : Black Sea, Mediterranean, Villefranche.

41. — **Enchelidium pauli** (MARION, 1870).

(Fig. 41, A, B.)

1 ♀, from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

Dimensions :

Length : 5,716 mm; $\alpha = 47,6$; $\beta = 5,35$; $\gamma = 27,5$; V. = 56,3 %.

FILIPJEV'S formula :

$$\frac{0 \quad 40 \quad 48 \quad 348 \quad 1068 \quad 3228 \quad 5508}{24 \qquad\qquad\quad 100 \quad 120 \quad 68} \quad 5716\ \mu.$$

MARION'S :

♂, Length : 5 mm; $\alpha = 41$; $\beta = ?$; $\gamma = 33,5$.

FILIPJEV'S :

♀ (S. marioni), 5,33 mm; $\alpha = 43$; $\beta = 6$; $\gamma = 34$; V. = 54 %.

MICOLETZKY and KREIS (1930) have brought *S. pauli* to the genus *Enchelidium*, since they found the male of their *S. pauli* var. *denticulatum* which although according to me distinct from *S. pauli*, is a closely related species. In 1924 MICOLETZKY had synonymized *S. pauli* and *S. marioni* (FILIPJEV). In this I do not agree with my predecessors.

MICOLETZKY's females from the Adria measured on the average 3,24 (1,7-4,8) mm; $\alpha = 36$; $\beta = 4,5$; $\gamma = 17,3$ (9-24); V. = 54,4 %.

My female tapers distinctly to the anterior end, where it is only 25 % as wide as at the posterior end of the oesophagus. Head end bluntly truncate. Labial papillae setiform, 6 in number. Cephalic setae : 10 (2 fused crowns), the submedian setae paired, the longer ones 38 % of the corresponding diameter, the shorter setae 26,2 % of the same diameter. Amphids distinct, although rather small, width of their orifice 16 % of the corresponding diameter opposite to the middle of the buccal cavity. Buccal cavity elongate, distinctly narrowed to the posterior end. Greatest width 41,5 % of the length, which is 40 micra.

Excretory pore almost immediately behind the posterior end of the buccal cavity, at 48 micra from the anterior end, followed by a long pore and a distinct ampulla. Birefringent bodies opposite to the lower end of the buccal cavity.

Anterior end with some short setae, placed more or less in longitudinal rows. I was unable to find the three short setae, mentioned by Micoletzky as present in this species and reminding at a similar row of hairs in the genus *Anticoma*. Nerve ring at 32,5 % of the whole oesophageal length.

Tail conical, soon tapering to a filiform portion, which is slightly swollen at its posterior end. Length of tail equal to 3,87 times the anal diameter. Filiform portion occupying almost half the length of the tail.

Micoletzky mentions in respect with his specimens of the Mediterranean that the excretory pore is nearer to the anterior end as 2 times the length of the buccal cavity. In my specimens the distance is almost equal to that in *Enchelidium denticulatum*. The species in question is closely allied to *Symplocostoma marioni* Filipjev, like I could study it from Alexandria. The structure of the buccal cavity of that species differs in that it does not possess the row of longitudinal rods found at the brink of the second portion of the buccal cavity, in the structure of the buccal teeth, whereas the amphids have a more forward position in *S. marioni* in comparison with *E. pauli*.

Geographical distribution : Marseille, Nice, Black Sea, Sebastopol, Neapel and Ischia, Adria, near Rovigno and Melada and Bocche di Catarro, Suez.

Genus CATALAIMUS Cobb, 1920.

42. — Catalaimus eberthi (De Man, 1878).

(Fig. 42, A-D.)

1 ♂, from Villefranche, « Baie de Lilong », sand. Depth 5 m.

The male mentioned under the heading undoubtedly belongs to the species described by De Man as *Enchelidium eberthi*. As for the female I am less certain, although the pilosity at the anterior end, the structure of the buccal cavity as well as the spot, where the excretory pore opens to the exterior, points in the same direction.

At the other hand there are some differences, so for instance the fact, that in the female no more than 6 cephalic setae could be discovered, whereas the female of a *Catalaimus* species normally possesses 10 cephalic setae; moreover the tail of the present female is less effilate than that of the male. I am however inclined to suppose that the aforementioned male and female belong to one and the same species, in which case this species would belong

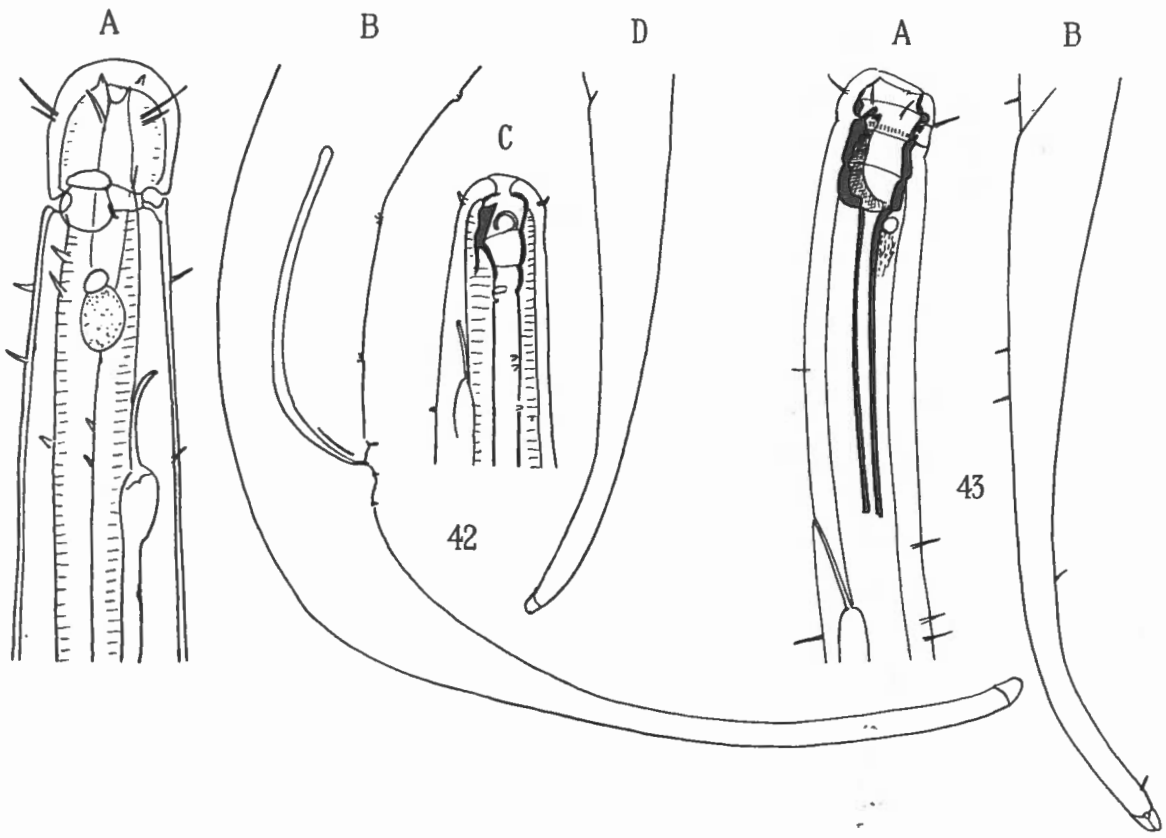

FIG. 42. — *Catalaimus eberthi* (DE MAN).
A : Male head. B : Male tail. C : Female head. D : Female tail.

FIG. 43. — *Symplocostoma paratenuicolle* n. nov.
A : Female head end. B : Female tail.

to the genus *Catalaimus* and not to the genus *Enchelidium*. At the other hand MICOLETZKY and KREIS (1930) have brought, and I think with good reason *Symplocostoma sabulicola* FILIPJEV to the genus *Catalaimus* and in this species the female at least — the male is not known — is in the possession of 6 cephalic setae. The female in question is indeed closely related to, if not identical with FILIPJEV's *S. sabulicola*.

If further researches would prove the correctness of my supposition that the forenamend male and female belong to one and the same species, then *S. sabulicola* might be a synonym of *Catalaimus eberthi*.

Length of the male from Villefranche :

♀ : 2.252mm; $\alpha = 40{,}2$; $\beta = 4$; $\gamma = 11{,}3$.

Cobb's formula :

0	40	300	580	M	2052	
20		40	48	56	39	2252 µ.

♂ after De Man : Length 2,085 mm; $\alpha = 41$; $\beta = 5{,}08$; $\gamma = 12{,}3$.

The slightly swollen head is bluntly rounded at the anterior end and demarcated against the remainder of the body by a constriction. A shallow pit leads into the rudimentary alimentary canal. I counted 6 labial papillae and 10 cephalic setae, the paired submedian setae being unequal in length, the longer ones measuring 53,2 % of the corresponding cephalic diameter, the shorter ones 26,75 % of the same diameter, being only half as long as the first.

On the oesophageal portion of the body the rather numerous short setae are more or less arranged in irregular rows. Amphidial openings, transverse slits, 38,4 % of the corresponding diameter, situated halfways between the anterior border and the eyes. The pigment spots are elongated oval, provided with roundish lenses. Excretory apparatus with a small ampulla and a long excretory duct. The latter opens just posterior to the eyes at a distance from the anterior border equal to 2,45 times the widest cephalic diameter. Nerve ring at 51,8 % of the oesophageal length.

Tail rather broad at base, quickly tapering to the long filiform apex, 6,8 anal diameters long. The filiform portion occupies 63,2 % of the whole tail. Spicula, slightly swollen at their proximal part, its chord 2,55 times as long as the anal diameter or 37,75 % of the whole tail length. Gubernaculum small, inconspicuous. Round the anal aperture one finds a number of minute setae, situated on papilla-like elevations, one in front of the anus, two on the postanal elevation of the body, whereas further forward a number of praeanal papillae are observed, of which the figure depicts 5 in all. De Man has found in his specimens from Naples only 6 cephalic setae, he says not to have seen the gubernaculum, which indeed may have escaped easily his observation. The number of praeanal papillae was seven in his specimen, which is one more than in ours, if the setiform papilla, situated just in front of the anal cleft, is considered as a praeanal papilla, with which it is certainly homologous.

Length : ♀, 1,824 mm; $\alpha = 45{,}6$; $\beta = 3{,}86$; $\gamma = 12$; V. = 58,8 %.

Filipjev's formula :

0	16	244	472	1072	1672	
12		36	40	40	32	1824 µ.

Head rounded anteriorly, without distinct papillae. A single crown of 6 cephalic setae only, measuring 14,7 % of the corresponding body diameter. Further some minute setae along the anterior end, more or less distributed in

longitudinal rows. Amphids transversely oval, 26,4 % of the corresponding diameter, opposite to the upper third of the ventral tooth. Birefringent corpuscles at the posterior end of the buccal cavity. Excretory pore just posterior to the buccal cavity. Excretory duct long, ampulla obvious. Buccal cavity with a rather broad vestibulum. Buccal cavity 2,12 times as long as it is wide. Ventral tooth obliquely cut at its distal end, which reaches to the implantation of the cephalic setae. Nerve ring at 51,5 % of the oesophageal length. Tail elongate conical with a fingershaped prolongation, 6,2 times as long as its anal diameter. Apical attenuation 4,75, the tail at apex being 21 % as broad as at the anal diameter.

GEOGRAPHICAL DISTRIBUTION : Mediterranean, Naples, Villefranche.

Genus SYMPLOCOSTOMA BASTIAN, 1865.

43. — **Symplocostoma paratenuicolle** nom. nov.

(Fig. 43, A, B.)

1 ♀. from « Baie de Lilong », sand. Depth 5 m.
Length : 3,804 mm; $\alpha = 57{,}2$; $\beta = 3{,}48$; $\gamma = 14$; V. = 55 %.

COBB's formula of the female I have brought under the same heading :

0	24	72	424	1064	2092	2732		
6			54	70	80	32	3804	V = 55%

I first have brought this female to the same species as the foregoing male belongs to, because it has a similar tail, secondly because we know that the females of the genus *Enchelidium* have an oral cavity distinctly divided into 4 portions by cuticularized rings and by the presence of distinct subventral teeth. As distinct differences with the male in question I may point to the presence of 6 cephalic setae instead of 10 and the more posterior position of the excretory pore.

Head truncated at the anterior end, with rather wide oral opening. Six rather inconspicuous labial papillae and 6 cephalic setae, 30 % of the corresponding cephalic diameter. Amphids opposite to the second portion of the buccal cavity. Just posterior to the latter the head is slightly constricted.

Buccal cavity strongly cuticularized, the long subventral tooth truncate at its tip. At a level with the tip of the tooth we find a row of small cuticularized rods. Just posterior to the buccal cavity the oesophageal cylinder contains the birefringent corpuscle followed immediately by an oval pigment-spot, thus giving the impression of an ocellus. Oesophagus with distinct cuticular lining. Some body setae irregularly scattered over the anterior portion of the body. Outlet of the ventral gland opening at a distance from the anterior border equal to 3 times the length of the buccal cavity. Nerve ring at 25 % of the oesophageal length. Vulva with distinct vulvar glands. Tail long and

slender, 8,25 anal diameters long, gradually tapering to the long filiform end, which occupies about 63 % of the whole tail length. Some short setae are observed mainly along the ventral surface of the same.

Geographical distribution : Mediterranean, Naples, Villefranche.

Discussion : I come to the conclusion that the concerned female might be identical with De Man's *Symplocostoma longicolle* Bastian.

Length of the female of De Man :

3,820 mm; $\alpha = 60,8$; $\beta = 4,45$; $\gamma = 16$; V. = 55 %.

Length of buccal cavity 1/57 of Oesophagus, 1/44 in my specimen.

Excretory pore at a distance from the anterior border equal to 5,3 times as long as the buccal cavity, therefore more posterior to that in my specimen.

Length of cephalic setae 90 % of the corresponding cephalic diameter.

Length of the tail 8,7 times the anal diameter.

If both specimens that of De Man (1878) and mine are conspecific and at the same time identical with the forementioned male than the species in question should be called *E. tenuicolle* Eberth and *E. eberthi* (=*Catalaimus eberthi*) would fall in the synonymy of that species.

Geographical distribution : Nizza, Villefranche.

44. — **Symplocostoma ponticum** Filipjev, 1918-1921.

(Fig. 44, A, B.)

1 juv. spec. from Villefranche « Baie de Lilong », sand. Depth 5 m.

Length : 3 mm; $\alpha = 57,5$; $\beta = 3,95$; $\gamma = 16,85$.

Cobb's formula :

$$\frac{0 \quad 12 \quad 380 \quad 760 \quad 920 \quad 2820}{12 \quad\quad 44 \quad 52 \quad 44 \quad 36} \quad 3000\ \mu.$$

Filipjev's :

♀, 7,250 mm; $\alpha = 50$; $\beta = 4,5$; $\gamma = 27$.

Body elongate, cuticle smooth, devoid of setae, bluntly rounded at the anterior end. No labial papillae observed. Cephalic setae 6 in number, 46 % of the corresponding cephalic diameter. Buccal cavity deep and narrow, 4 times as long as its greatest width and at the utmost 1/64 or 15,6 % of the whole oesophageal length. The buccal cavity is distinctly subdivided into 4 loculi of which the first 2. just posterior to the vestibulum are small, much broader than deep, whereas the third and fourth are almost twice as deep and inter se almost equally voluminous, as the first two. The subventral teeth reach to the second division of the buccal cavity. Oesophagus with birefringent body and an inconspicuous pigment spot. Oesophagus narrow. Nerve

ring at 50 % of the oesophageal length. Excretory cell 1,2 times as long as the oesophagus. Excretory pore at a distance from the anterior end, equal to 5,6 times the length of the buccal cavity or on 32,5 % of the whole body length. Tail gradually tapering to the apex, elongate conical, 5,82 times as long as the anal diameter. Posterior attenuation 0,34.

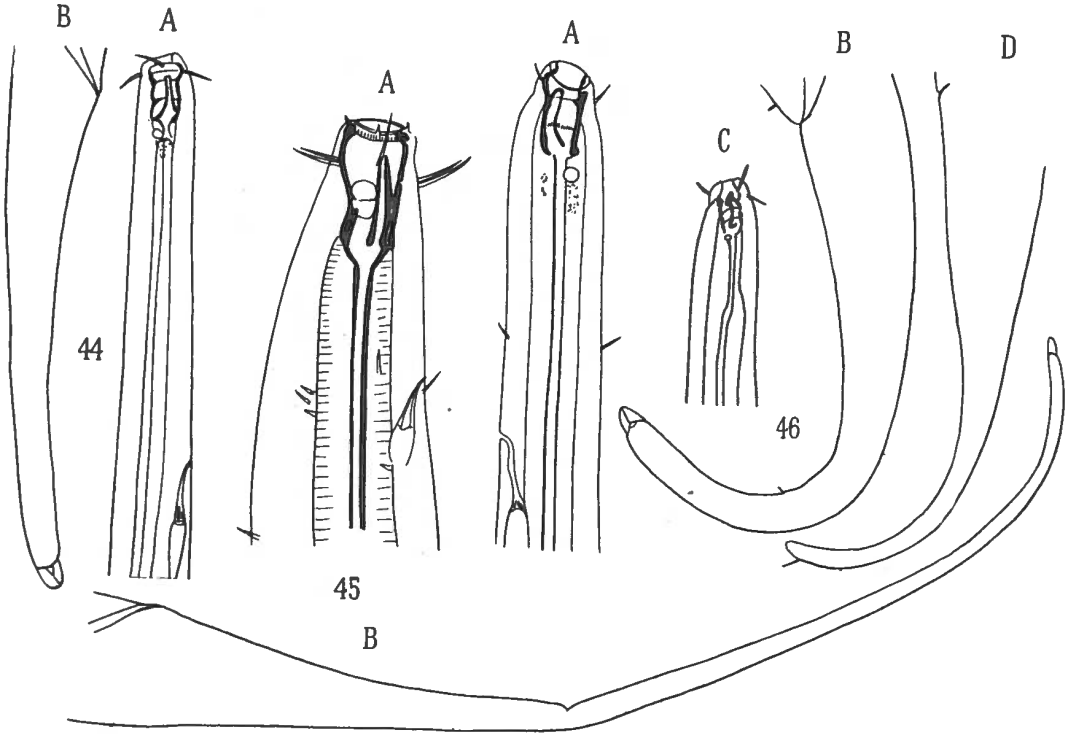

FIG. 44. — *Symplocostoma ponticum* FILIPJEV.
A : Juvenile head. B : Tail.

FIG. 45. — *Symplocostoma filicauda* n. sp.
A : Head end. B : Tail.

FIG. 46. — *Symplocostoma longicolle* BASTIAN.
A : Female head end. B : Female tail. C : Juvenile head end. D : Tail of the same.

GEOGRAPHICAL DISTRIBUTION : Black Sea, Mediterranean, Villefranche, Alexandria.

45. — **Symplocostoma filicauda** n. sp.

(Fig. 45, A, B.)

1 juv. spec. from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

FILIPJEV's formula :

$$\frac{0 \quad 140 \quad M \quad 660}{4 \quad 12 \quad 12 \quad 10} \quad 736\ \mu.$$

Length : 0,736 mm; $\alpha = 61{,}3$; $\beta = 5{,}4$; $\gamma = 9{,}65$.

Body slender, tail filiform. Cuticle with a few setae at the anterior end. Anterior end strongly attenuated too. Head bluntly truncated, lips with a crown of 6 minute setiform papillae. Cephalic papillae 10 in number, rather long, the lateral ones 60 % of the corresponding body diameter, the longer setae of the submedian pairs 60 %, the shorter setae of the same pairs 48 % of the corresponding cephalic diameter. Amphids more or less circular opposite to the middle of the buccal cavity, 26 % of the corresponding body diameter. Buccal cavity long and wide, 2,55 times as long as its widest part. Relations of both portions of the buccal cavity as 1,33 : 1, the proximal part being the undeepest one. Ventral tooth long and rather acute, reaching to in front of the anterior cephalic setae, or measuring 76 % of the whole buccal cavity, dorsal tooth at the border between the upper and the lower portion of the buccal cavity. No eyes, no birefringent bodies. Excretory pore at 1,75 times the length of the buccal cavity from the anterior end, followed by a short excretory duct and the usual ampulla.

At the same level as the excretory pore one finds in the lateral longitudinal field a group of 3 setae, apart from some short setae which do not occur in groups together. Tail effilate, quickly tapering to the long filiform portion, which occupies 70 % of the whole tail length, which is 9,1 times as long as the anal diameter. Attenuation 11, the tail at apex 9,05 % of the anal diameter.

The species in question is at once distinguishable at its long filiform tail and the wide slender buccal cavity together with the anterior position of the excretory pore, shaped as in *Symplocostomella mediterranea* n. sp. (confer p. 78).

46. — **Symplocostoma longicolle** BASTIAN, 1865.

(Fig. 46, A-D.)

1 ♀, 1 juv. from Villefranche, off the « Vieux Villefranche », black mud and organic detritus. Depth 20 m.
1 juv. from Villefranche « Baie de Lilong », sand. Depth 5 m.

Length : ♀, 4,52 mm; $\alpha = 45{,}2$; $\beta = 4{,}75$; $\gamma = 17{,}4$; V. = 61 %.

FILIPJEV'S formula :

0	400	1060	2760	4260	
12		80	100	40	4520 µ.

Juv. length : 2,484; $\alpha = 47{,}8$; $\beta = 3{,}22$; $\gamma = 16{,}3$.

FILIPJEV'S formula :

0	12	392	772		2332	
12		36	48	52	28	2484 µ.

Juv. length : 1,544 mm; $\alpha = 38{,}6$; $\beta = 2{,}86$; $\gamma = 9{,}41$.

Head rounded anteriorly, crowned with 6 cephalic setae, as long as 35 % of the corresponding cephalic diameter. Buccal cavity rather deep, with a circular opening, 2,78 times as long as its widest diameter. Length of anterior part

of the buccal cavity 38,5 % of the total length of the latter. Ventral tooth long and strong, 69,5 % of the total length of the buccal cavity. Just posterior to the buccal cavity there is a distinct ocellus. Oesophageal portion of the body with some scattered setae. Excretory pore at a distance from the anterior end equal to 4 times the length of the buccal cavity. Excretory apparatus with a long pore and a distinct ampulla. Nerve ring at 26,5 % of the oesophageal length. Tail elongate conical with a rather long fingershaped portion. Length of the tail 5,8 times the anal diameter. It is provided with a few short setae.

This species has a very wide distribution and is found near Gran Canaria Suez to the Black Sea, occurs likewise in North Sea, Baltic, Trondjhemsfjord, Oslofjord, etc.

47. — **Symplocostoma longiseta** n. sp.

(Fig. 47, A, B.)

1 juv. from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

Length : 1,292 mm; $\alpha = 32{,}3$; $\beta = 3{,}4$; $\gamma = 11{,}5$.

FILIPJEV'S formula :

$$\frac{0 \quad 8 \quad 200 \quad 380 \quad 1180}{8 \quad\quad 28 \quad 40 \quad 20} \quad 1192\ \mu.$$

It is with some doubt that I bring the species in question to the said genus. There is an indication of a formation of 4 bulbi at the posterior end of the oesophagus, so that one has to think at the genus *Bolbella* or *Polygastrophora*, but this indication is not very conspicuous.

If the species in question is compared with the other species of *Symplocostoma* it is obvious that here the cervical setae are distinctly longer than in most of the known species of that genus. There is a long subventral tooth. Head more or less rounded anteriorly, with a crown of rather distinct labial papillae. Cephalic setae, 6 in total comparatively long, 89 % of the corresponding cephalic diameter. Buccal cavity twice as long as its widest diameter. Anterior portion 20,75 % of the whole buccal cavity. The long tooth reaches till in front of the cephalic setae. The cervical setae which are inserted just behind the buccal cavity are almost as long as the corresponding diameter. Nerve ring at 52,6 % of the oesophageal length.

Tail rather long, at first cylindrical at its base, than gradually tapering to a rather filiform terminal portion. Length 5,18 times the anal diameter. Attenuation 10,4. Length of filiform portion 1/3 of while tail.

Order II : CHROMEDOROIDEA.

Family CYATHOLAIMIDÆ.

Genus LONGICYATHOLAIMUS Micoletzky, 1924.

48. — **Longicyatholaimus filicaudatus** n. sp.

(Fig. 48, A, B.)

1 ♀, from Villefranche, between the « Lazareth » and « Anse Passable », grey mud.
Length : 2,232 mm; $\alpha = 50,6$; $\beta = 11,6$; $\gamma = 4,3$; V. = 44,6 %.

Filipjev's formula :

$$\frac{0 \quad 192 \quad 992 \quad 1712}{24 \quad 32 \quad 44 \quad 24} \quad 2232\ \mu.$$

Body elongated with a long filiform tail. Cuticle with distinct lateral fields demarcated by 4 rows of larger dots, width of these fields 1/3 of the body diameter. Submedially each ring bears 3 transverse rows of smaller dots. Body only slightly tapering anteriorly. Here the width of the body is 54,5 % of the greatest body width.

Head rounded anteriorly, inconspicuously demarcated against the remainder of the body. Lips with a crown of 6 labial papillae and a second crown of 10 cephalic setae. The latter presents 4 pairs of submedian setae and 2 lateral setae in total. The longer partners of the submedian couples measure 36,8 % of the corresponding cephalic diameter. Buccal cavity with the usual diadem and a pointed dorsal tooth. Oesophagus hardly broadened posteriorly. Amphids with 6 ½ windings, their diameter 47 % of the corresponding body diameter.

Position of amphids just posterior to the insertion of the dorsal tooth. Tail conical at base, quickly tapering to the long filiform portion which occupies 4/5 of the whole tail. Attenuation 8. Length of tail equal to 25 anal diameters. Tail hardly swollen at apex. *L. longicaudatus* has amphids with 1 ½ winding only whereas the amphids of the present species possess 6 ½ windings.

The species in question is closely related to *L. longicaudatus* (De Man) created by De Man (1878) and redescribed by Kreis (1929). De Man had to his disposition a male only, long 2 mm, in which the β was 6,8, whereas Kreis saw females as well as males. In the latter the γ ranged between 5,5 and 7,3 in the former between 6,6 and 7,1. Therefore in comparison the oesophagus of my female is much shorter, whereas the reverse is the case with the tail of the same specimen, which is decidedly longer than in De Man's and Kreis specimens.

From *L. tenuicaudatus* the present species may be distinguished by the more regular punctation and by the greater number of amphidial windings.

From *L. heterurus* Cobb and *L. trichiurus* Cobb it may be distinguished by the number of the amphidial windings met the cuticular pattern.

49. — **Longicyatholaimus effilatus** n. sp.

(Fig. 49, A-G.)

2 ♂♂, 7 ♀♀, 1 juv. from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus. Depth 3 m.

Length of a ♂ : 2,464 mm; $\alpha = 47{,}2$; $\beta = 15{,}3$; $\gamma = 8{,}55$.

Filipjev's formula :

$$\frac{0 \quad 160 \quad 340 \quad M \quad 2168}{28 \quad 52 \quad 52 \qquad 52} \quad 2464\ \mu.$$

No female measured.

Head end blunt. Six distinct lips, each crowned with a setiform papilla. The cuticle is transversely striated and marked with rows of dots and points, of which those on the lateral fields are particularly large and distinctly differentiated from those on the submedian fields, where the rows are more dense and the individual dots more close than on the lateral fields. Lateral fields with irregular rows of pores, opening to the cuticular glands. Further some scattered setae. Cephalic crown of setae composed of 10 elements in the usual distribution. Setae rather long, the longer submedian setae in the male 40 % of the corresponding diameter; shorter submedian setae 30 % of the same diameter, lateral setae 32 % of that diameter. Amphids consisting of 4 windings, 36,7 % of the corresponding body diameter. Buccal cavity shallow with a rather long dorsal tooth. From the posterior end of the oesophagus till the anal opening the width of the body remains the same.

There are 3 minute praeanal papillae. Spicula rather long and slender. slightly knobbed at their proximal end, pointed at their distal end and provided with a longitudinal crest along the sides. Length of spicula equal to 1,5 times the anal diameter. Gubernaculum angular with a long and slender prolongation. Distal end truncate, with fine dentition along the exterior rim. Length of the gubernaculum 1,34 times the anal diameter. Male tail conical on its basal 42,5 %, than filiform, slightly swollen at its apex. Medioventral one finds a row of 8 rather long setae.

Female in general as the male. Cephalic setae longer than in the male the longer submedian setae 72 % of the corresponding cephalic diameter, the shorter submedian setae 46,5 % of the same diameter. Body setae in the oesophageal region longer than in the male.

Female tail in general shaped as in the male. The conical portion half as long as the tail.

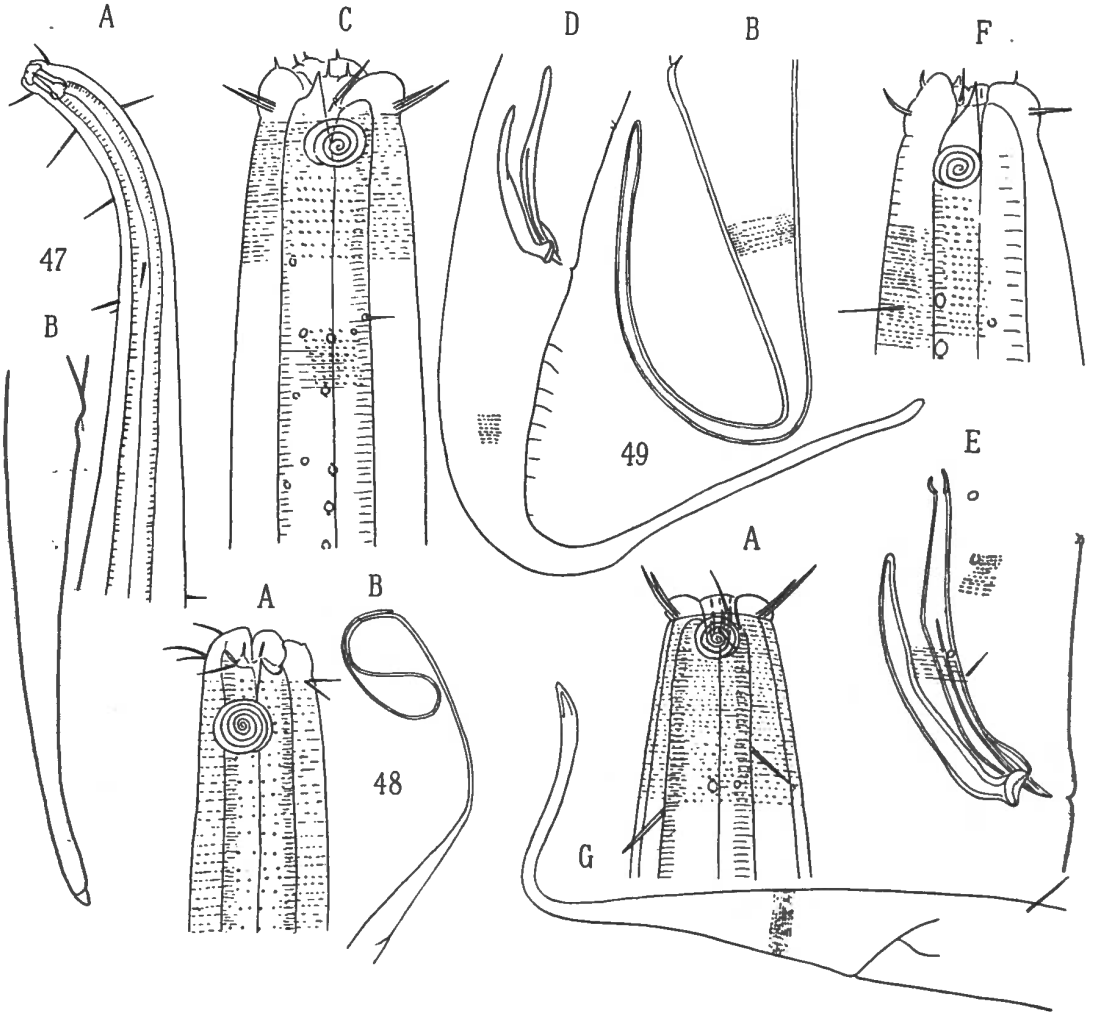

Fig. 47. — *Symplocostoma longiseta* n. sp.
A : Head end. B : Tail.

Fig. 48. — *Longicyatholaimus filicaudatus* n. sp.
A : Female head end. B : Tail.

Fig. 49. — *Longicyatholaimus effilatus* n. sp.
A : Female head end. B : Female tail. C : Male head. D : Male tail.
E : Male genital armature. F : Female head. G : Tail.

Genus METACHONIOLAIMUS n. gen.

This genus is closely related to *Choniolaimus* DITLEVSEN, differs from the latter in that it presents a distinctly differentiated dotting on the lateral fields. The buccal cavity is shallow, without distinct teeth. Disposition of the cephalic setae as in *Cyatholaimus*. Oesophagus with a posterior bulbar swelling, which is however not very vigorous. Spicula curved. Gubernaculum plate-like, shaped as in *Choniolaimus*. Tail effilate.

50. — **Metachoniolaimus pustulosus** n. sp.

(Fig. 50, A-C.)

1 ♀. from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

Dimensions : $\frac{0 \quad 132 \quad 464 \quad 1064}{16 \quad 40 \quad 40 \quad 24}$ 1208 µ

Length : ♀, 1,208 mm; $\alpha = 30{,}8$; $\beta = 9{,}1$; $\gamma = 8{,}8$; V. = 38 %.

Head end truncate anteriorly to faintly rounded. Lips surrounded by minute labial papillae, further at least 6 very short cephalic setae. The large transverse spiral amphids show 4 ½ windings, their diameter is 57 % of the corresponding body diameter. Lateral sides ornated with two median rows of large dots, widely spaced and separated from two other longitudinal rows of slightly finer texture, by a distance half that of the distance over which the two rows of larger dots are separated. Dorsally and ventrally the dots are finer and more regularly spaced. Buccal cavity shallow, ornate with a diadem, which can however not be analysed further, because the cavity seems to be filled with dirt. Oesophagus ending in a faint, inconspicuous posterior bulb. Tail elongate, conical with a filiform portion occupying almost half the tail-length. Spinneret long, resembling that in *Spilophorella mediterranea*. Some scanty hairs are scattered over the cuticle. Length of tail equal to almost 6 anal diameters.

51. — **Metachoniolaimus cylindribucca** n. sp.

(Fig. 51, A-C.)

1 ♂, from Villefranche, entrance of the road, grey mud. Depth 230 m.

Dimensions : $\frac{0 \quad 116 \quad M \quad cl.}{12 \quad 28 \quad 32 \quad 24}$ 924 µ.

Length : ♂, 0,924 mm; $\alpha = 29$; $\beta = 8$; $\gamma = ?$.

Head capshaped, rounded anteriorly with 6 minute labial papillae and 10 cephalic setae at a level with the upper end of the diadem. Amphids circular, composed of 4 ½ windings, their diameter 45 % of the corresponding body diameter. On the lateral sides we find 4 longitudinal rows of dotted

points, alternating with cuticular pores and finer dots, separated by narrower spaces to the dorsal and ventral sides. The mentioned 4 rows are widely spaced. On the cuticle some scanty hairs. Buccal cavity cylindrical with distinct diadem, but without a dorsal tooth. Oesophagus ending with a distinct posterior bulbus, far more distinct than in *Metachoniolaimus pustulosus*.

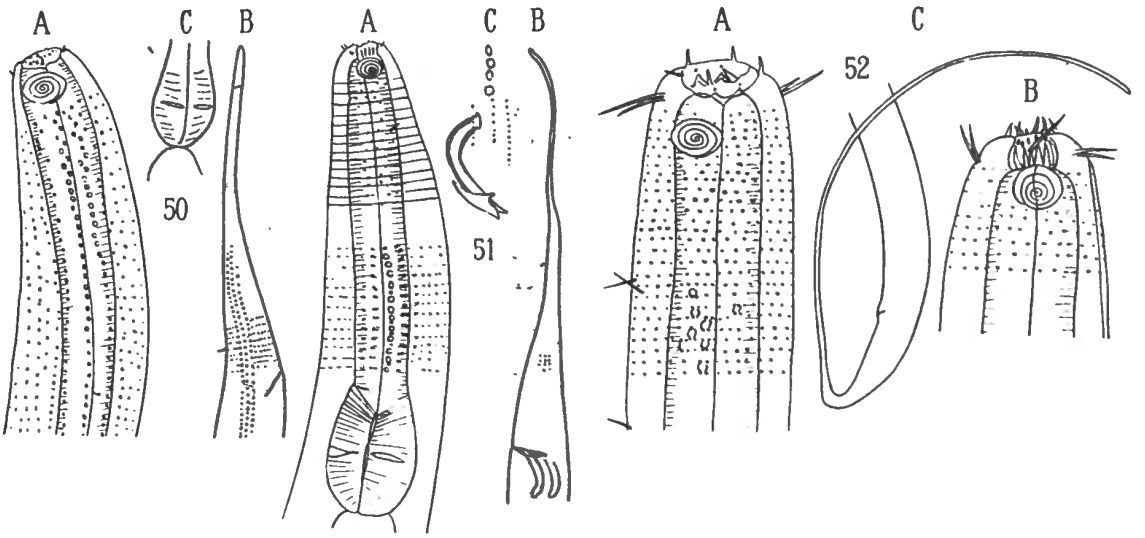

FIG. 50. — *Metachoniolaimus pustulosus* n. sp.
A : Female head end. B : Female tail. C : Base of œsophagus.
FIG. 51. — *Metachoniolaimus cylindribucca* n. sp.
A : Male head end. B : Male tail. C : Male genital armature.
FIG. 52. — *Paralongicyatholaimus mastigodes* n. sp.
A B : Female head ends. C : Tail.

Bulbus occupying 28 % of the oesophageal length. Spicula curved, broadly truncate at the proximal end, sharply pointed at the distal end, almost 1 anal diameter long. Gubernaculum platelike with distal tooth. Tail at first elongate conical than filiform, the filiform portion occupying almost 2/3 of the whole taillength. Tail 8 anal diameters long.

The present species may be easily distinguished from the former by the more circular amphids, the cylindrical buccal cavity, the more pronounced oesophageal bulb and the longer filiform tail.

Genus PARALONGICYATHOLAIMUS n. gen.

This new genus can be distinguished from the genus *Longicyatholaimus* by the absence of a dorsal tooth in the buccal cavity and by the fact, that the cuticle does not show specially differentiated lateral fields, since the punctation on the transverse rows is uniform. Amphids with 5 ½ windings. Tail distinctly effilated like in the genus *Longicyatholaimus*.

52. — **Paralongicyatholaimus mastigodes** n. sp.

(Fig. 52, A-C.)

2 ♀♀, from Villefranche, off the « Pointe de la Gavinette ». Depth 80 m.

Length : 2,668 mm; $\alpha = ?$; $\beta = 6.67$; $\gamma = 3,92$; V. = 45 %.

FILIPJEV'S formula :

$$\frac{0 \quad 400 \quad 1200 \quad 1988}{} \quad 2668\ \mu.$$

Head end demarcated against the remainder of the body by a slight constriction. Cuticle uniformly punctate, dotted with transverse rows of points. On the lateral fields oval pores are scattered between the transverse rows of points and connect these. Oesophageal portion of the body with some setae.

Six labia with as many setiform labial papillae. The crown of cephalic setae embraces 10 components, all setae subequal, 45,5 % of the corresponding cephalic diameter. Amphids circular with 5 ½ windings, 32,5 % of the corresponding body diameter, opposite to the lower border of the buccal cavity. Buccal cavity with strengthened walls and a diadem consisting of about 12 longitudinal ribs. Tail much like that of *Longicyatholaimus filicaudatus*, quickly tapering to the long filiform portion, which occupies 86 % of the whole tail length. Terminus of the tail not swollen. Attenuation 13. Length of tail 17 times the anal diameter.

The present species is nearly related to *Spilophora giardi* DE ROUVILLE found near Cette, which species apparently belongs to the same genus although it is almost impossible to reconstruct it after the very incomplete description DE ROUVILLE (1904) has given from this species. Similarly it is almost impossible to get a correct idea of the structure of this species after the figure I have seen in the bequest of the late Dr. DE MAN, which figure answers to DE ROUVILLE's description but is very incomplete.

Genus CYATHOLAIMUS BASTIAN, 1865.

53. — **Cyatholaimus paucispira** n. sp.

(Fig. 53, A-C.)

1 ♀, from Villefranche, baie de Lilong, sand. Depth 3 m.

Length : 3,6 mm; $\alpha = 45$; $\beta = 11{,}2$; $\gamma = 9$; V. = 55 %.

FILIPJEV'S formula :

$$\frac{0 \quad 160 \quad 320 \quad 1580 \quad 3200}{40 \qquad 76 \quad 80 \quad 52} \quad 3600\ \mu.$$

Body tapering anteriorly, at the utmost : half as wide anteriorly as its maximal width. Head rounded anteriorly, not sharply set off from the remainder of the body. Cephalic papillae setiform, 6 in number. Ten cephalic setae, the submedian pairs of setae unequal in length, the longer hairs measuring 38,3 % of the corresponding cephalic diameter. Amphids large, circular, consisting of 2 ½ loose windings, their diameter 35,5 % of the corresponding body diameter. Cuticula with transverse rows of dots, the dots demarcating the borders of the rings distinctly finer than those which occupy a transmedian position on the cuticular rings.

Nerve ring halfways the oesophageal length. Vulva placed posteriorly with distinct vulvar glands; the vulva itself is strengthened by longitudinal cuticularized ribs. Tail elongate, at first cylindrical, then more finger-shaped, the latter portion occupying 41,5 % of the whole tail, which is 8 anal diameters long. Posterior attenuation 6.

54. — **Cyatholaimus chitwoodi** n. sp.

(Fig. 54, A-C.)

1 ♀, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

Length : 1,608 mm; $\alpha = 22{,}3$; $\beta = 5$; $\gamma = 11{,}42$; V. = 48,5 %.

FILIPJEV'S formula :

$$\frac{0 \quad 132 \quad 320 \quad 780 \quad 1468}{20 \qquad 60 \quad 72 \quad 40} \quad 1608\ \mu.$$

The present species shows much resemblance with *Præacanthonchus punctatus* BASTIAN and might eventually be reckoned to that genus, were not the labial papillae of the species belonging to that genus minute, but prominent like in the present species, where we find setiform papillae.

Further we do not know how the male is structured, so that there is reason to keep the present species in the genus *Cyatholaimus* till we have more material to our disposition.

Head rounded anteriorly, demarcated posteriorly by a faint suture line. Cuticle striated transversely by means of points. Here and there, but especially along the lateral fields, placed more or less in rows, one may observe the pores of the unicellular skin glands.

Six setiform labial papillae surround the oral opening. There are 10 cephalic setae, of which the submedian groups are paired. Length of the longer submedian hairs 31,5 % of the corresponding cephalic diameter, the shorter ones 22,7 % of the same diameter. Amphids circular in outline, but

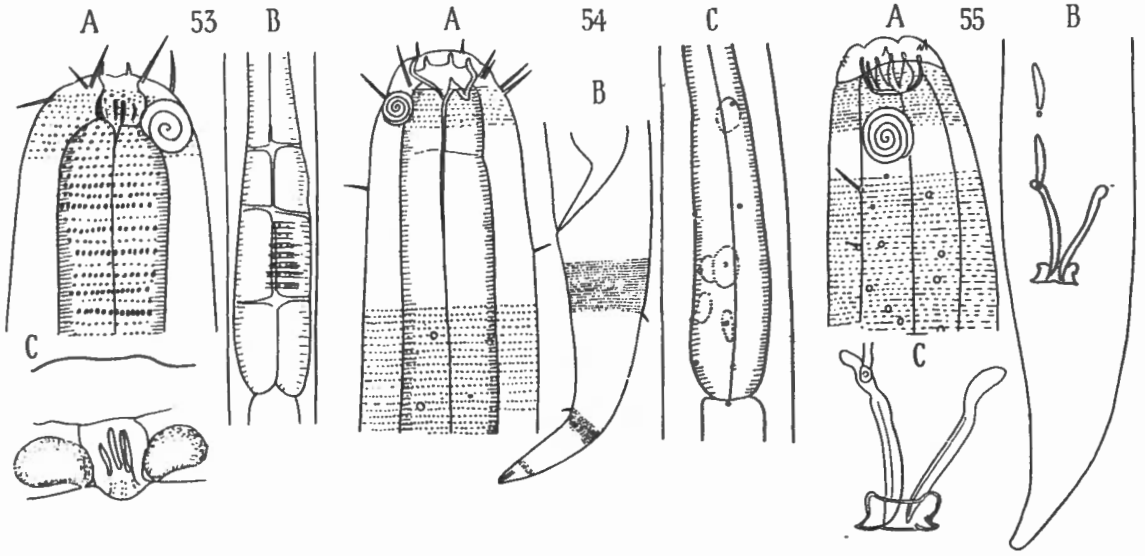

FIG. 53. — *Cyatholaimus pauctspira* n. sp.
A : Female head. B : Tail. C : Vulva.

FIG. 54. — *Cyatholaimus chitwoodi* n. sp.
A : Female head. B : Tail. C : Base of œsophagus.

FIG. 55. — *Paraseuratiella brevisata* n. sp.
A : Head. B : Male tail. C : Male genital armature.

spiral in structure, situated opposite to the lower border of the buccal cavity, measuring 27,7 % of the corresponding body diameter. Buccal cavity shallow with a diadem, composed of 6 longitudinal ribs. Oesophagus cylindrical, slightly widened to the posterior end. No oesophageal bulb present. Nerve ring at 41,3 % of the whole oesophageal length. The skin bears some scattered hairs as well in the oesophageal region as on the tail part of the body.

Tail elongate conical, 2,65 times as long as the anal diameter. Spinneret distinct but short.

I have dedicated the present species to B. G. and M. CHITWOOD, the well known nematologists.

Cyatholaimus chitwoodi resembles likewise *C. sunesoni* ALLGÉN, recently (1942, p. 39) described by this author from Banyuls-sur-Mer. ALLGÉN's figure 9.

(p. 39) is rather incomplete with respect to the pilosity of the head end of his species. The amphids of his species show a smaller number of revolutions. ALLGÉN states to have found a female but fails to give measurements of the latter. The tail of his male tapers more adruptly than is the case with our female. So that we remain till so far more or less in doubt about the question of *chitwoodi* is conspecific with *sunesoni* or not. Should latter investigations prove this to be the case, than the present species has to change its name into *sunesoni*.

Genus PARASEURATIELLA n. gen.

The genus in question is intermediate between *Cyatholaimus* and *Seuratiella*. Like in *Seuratiella* the male is in the possession of 4 equal praeanal tubuli. The gubernaculum however, that, in *Cyatholaimus*, accompanies the spicula over almost their whole length, presents no longitudinal apophyses, but is shaped like a somewhat irregular rectangular plate with distal tooth-like excrescences. Further the most anterior tubulus is not larger than the three following ones, like in the case in *Seuratia*. Buccal capsule without the dorsal tooth, structured like in *Cyatholaimus*. Punctation uniform, no lateral differentiations. Ocelli present.

55. — **Paraseuratiella breviseta** n. sp.

(Fig. 55, A-C.)

1 ♂, 1 ♀, from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

Length : ♂, 1,092 mm; $\alpha = 17$; $\beta = 5{,}7$; $\gamma = 10{,}9$.

FILIPJEV'S formula :

$$\frac{0 \quad 192 \quad M \quad 992}{28 \quad 60 \quad 64 \quad 52} \quad 1092\ \mu.$$

Length : ♀, 1,072 mm; $\alpha = 22$; $\beta = 7{,}08$; $\gamma = 8{,}92$.

FILIPJEV'S formula :

$$\frac{0 \quad 80 \quad 162 \quad 952}{12 \quad 40 \quad 48 \quad 24} \quad 1072\ \mu.$$

Head distinctly demarcated, in the possession of 6 lips. Labial papillae inconspicuous. Cephalic setae short, the partners of the submedian groups slightly unequal, 10,4 % of the corresponding cephalic diameter. Amphids rather large, with 5 ½ windings, circular, slightly posterior to the buccal cavity, 38 % of the corresponding body diameter. Cuticle with transverse rows of rather fine points, whereas the lateral fields are indicated by the numerous, irregularly scattered pores of the lateral glands. Ocelli present. Opening of the ventral gland not seen. In the oesophageal region one finds some short setae. Buccal cavity shallow and wide, with a diadem of 12 ribs. Eyes present.

Nerve ring in the female at 53 % of the oesophageal length. In the male 4 similar equidistant praeanal tubuli, the foremost on 3 anal diameters from the cloaca. Spicula slightly curved, knobbed at their proximal end, pointed at their apex, 85 % of the anal diameter long. Gubernaculum with upper edges rounded, lower angles pointed. Tail conical, 2,17 times as long as the anal diameter.

Genus PRÆACANTHONCHUS MICOLETZKY, 1924.

56. — **Præacanthonchus micoletzkyi** n. sp.

(Fig. 56, A-C.)

1 ♂, from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*.

The species is closely allied to *P. punctatus* (BASTIAN), which was falsely brought by me to the genus *Cyatholaimus* in my treatise on the Nemas from the North Sea and the Baltic. It may be distinguished from it by the different shape of the proximal end of the gubernaculum, which is undoubtedly more slender in the present species than in *punctatus*. In *punctatus* there are 6-7 praeanal papillae, whereas the present species does not possess more than 4 prominent papillae with tubular outlets of the concerned glands and a fifth papilla just anterior to the cloaca, which apparently is a slightly reduced tubulus.

The shape of the gubernaculum and spicula, as well as the number and structure of the praeanal papillae strongly resembles the figure KREIS has given from his species *Paracanthonchus arcuatus* from the Mediterranean, but the present species misses the characteristical dorsal buccal tooth, which all species of *Paracanthonchus* possess.

Yet I will not exclude the possibility that the present species is identical with the species MICOLETZKY has named *Præacanthonchus mediterraneus* in 1924, which species he characterized by saying that it differs from *P. punctatus* BASTIAN in that the proximal part of the gubernaculum is paired, whereas it is unpaired in *punctatus*. But since MICOLETZKY has given no further particulars of this species, which he promised to describe at a later date, *P. mediterraneus* must remain a nomen nudum. So I may dedicate the present species to the well known helminthologist MICOLETZKY by naming it *P. micoletzkyi*, although there will always remain some probability that the present species is conspecific with the named *P. mediterraneus*.

Length of the male : 1,132 mm; $\alpha = 28{,}5$; $\beta = 6{,}6$; $\gamma = 9{,}45$.

FILIPJEV's formula :

$$\frac{0 \quad 92 \quad 172 \quad 1012}{20 \qquad 36 \quad 40} \quad 1132\ \mu.$$

Head distinctly demarcated by a suture line. Six lips with inconspicuous labial papillae. Cephalic setae rather slender, 33 % of the corresponding

cephalic diameter. Amphids consisting of 4 ½ windings, circular, posterior to the buccal cavity, 41 % of the corresponding body diameter. Lateral fields demarcated by rows of larger, more widely distanced dots and rows of pores belonging to the corresponding skin glands; width of the lateral fields 60 % of the body diameter. Excretory pore on 2,64 times the width of the head at the level of the cephalic setae from the anterior end. Buccal cavity rather deep with a diadem of longitudinal ribs.

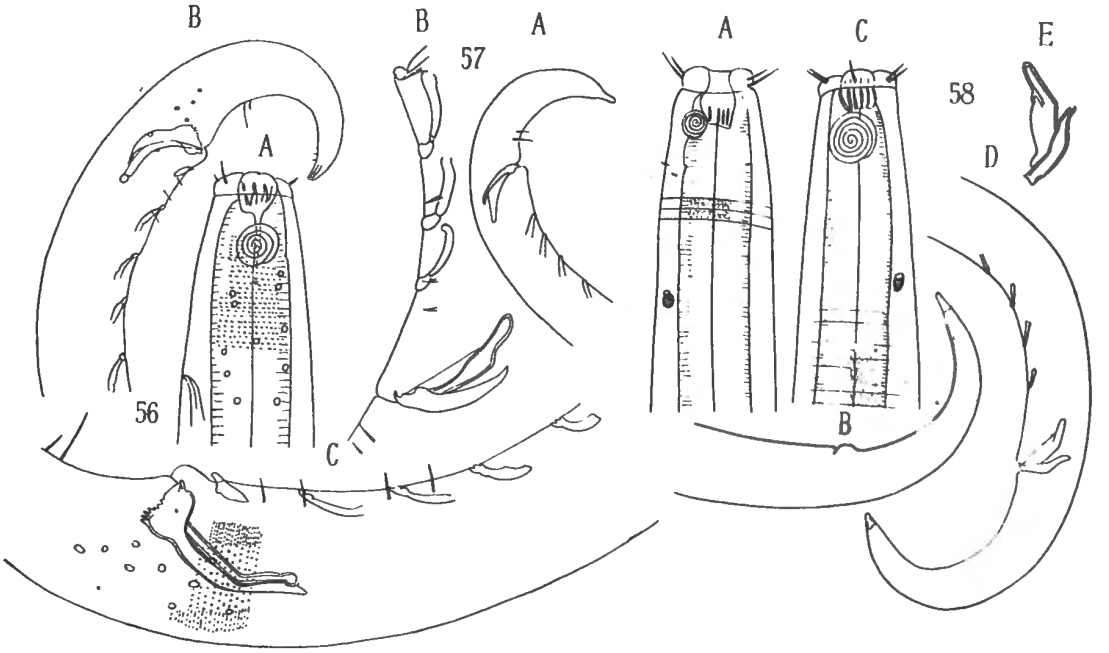

FIG. 56. — *Præacanthonchus micoletzkyi* n. sp.
A : Male head. B : Male tail.
C : Male genital armature.

FIG. 57. — *Præacanthonchus angulatus* n. sp.
A : Male tail.
B : Male genital armature.

FIG. 58. — *Præacanthonchus uniformis* n. sp.
A : Female head end. B : Female tail. C : Male head end. D : Male tail.
E : Male genital armature.

There are 4 distinct praeanal tubuli, separated from each other by almost equal distances, a fifth is found at the base of the anal promontory. Apart from these tubuli one finds in the ventral body sector some praeanal setae, as well as some longer setae on the ventromedian tail surface. On the tail end one may distinguish much clearer the difference in punctation between the lateral fields and the submedian body sectors, on which the rows of points are more closely placed, whereas the points are here much smaller and finer. Gubernaculum with paired lateral prolongations which are curved towards the head end and an unpaired broadened distal portion that bears some teeth at the

anal end, whereas more to the dorsal side of the same small denticulations are visible. Length of gubernaculum 91 % of the anal diameter. Spiculum curved, knobbed at the proximal end, pointed distally. Length of the spicular chord 1,12 times as long as the anal diameter. Tail curved ventrally with a distinct spinneret, 2,5 anal diameters long.

MICOLETZKY (1934, p. 135) supposes that *Cyatholaimus quarneriensis* VON DADAY might be a synonym of *Præacanthonchus mediterraneus* MICOLETZKY. In view of the fact that *P. mediterraneus* is a nomen nudum, I can neither confirm nor deny this supposition. If my figures are compared with those of VON DADAY (Pl. XXI, fig. 4-8) it is rather certain that both species are not identical, confer the dissimilarity of the praeanal papillae in the present species, the peculiar setosety of the tail, etc. So *C. quarneriensis* VON DADAY althoug probably belonging to *Præacanthonchus* must remain a questionable species.

57. — **Præacanthonchus angulatus** n. sp.

(Fig. 57, A, B.)

1 ♂, 1 juv. from Villefranche, off the « Vieux Villefranche », black mud. Depth 20 m.

Closely allied to the foregoing species but differing from it in the structure of the gubernaculum, which is angular, with hooked distal end. Gubernaculum almost 2/3 as long as the spiculum embracing the latter at its distal end. Gubernaculum as long as the anal diameter. Spiculum with a bend, its manubrium rather narrow and hardly headed, followed by a broader piece, which again attenuates towards the tip, 1,1 anal diameters long. There are only 4 praeanal tubuli, accompanied by short setulae, the anterior one separated from the anal opening by a distance equal to 2,64 anal diameters. The fifth reduced tubulus that was observed in *Præacanthonchus micoletzki* SCHUURMANS STEKHOVEN was not present in this species. Tail angular, curved ventrally, with distinct spinneret. There are here the same two unequal setae on the medio-ventral side, like I found in *micoletzkyi*. Tail 4 anal diameters long. Head end like in *micoletzkyi*.

Dimensions :

Length : ♂, 0,852 mm; $\alpha = 19{,}4$; $\beta = ?$; $\gamma = 10{,}65$.

$$\frac{0 \quad 700 \quad M \quad 772}{16 \qquad 44 \quad 32} \quad 852\ \mu.$$

58. — **Præacanthonchus uniformis** n. sp.

(Fig. 58, A-E.)

1 ♀, from Villefranche « Baie de Lilong », sand. Depth 5 m.

Length : ♀, 1,272 mm; $\alpha = 35\ 2$; $\beta = 7{,}4$; $\gamma = 9{,}1$.

Filipjev's formula :

$$\frac{0 \quad 172 \quad M \quad 1132}{20 \quad 32 \quad 36 \quad 28} \quad 1272\ \mu.$$

Length : ♀, 1,2 mm; $\alpha = 30$; $\beta = 6{,}65$; $\gamma = 10$; V. = 51,5 %.

Filipjev's formula :

$$\frac{0 \quad 180 \quad 620 \quad 1080}{20 \quad 36 \quad 40 \quad 24} \quad 1200\ \mu.$$

The present species fits best in the genus *Præacanthonchus* in the relationship of *Præacanthonchus angulatus* from which it may be distinguished by its larger size, by the more coarse and truncate tip of the gubernaculum, the broader spiculum. Tail comparatively longer. Dotting hardly more distinct on the lateral sides.

Head portion distinctly demarcated by a constriction from the remainder of the body. Six lips. A crown of 10 slender cephalic setae, of almost equal size measuring 40 % of the cephalic diameter long. Lips swollen. Amphids spiral, their outline circular, with 5 ½ windings in the male sex, female amphids with 4 ½ windings only. In the male the diameter of the amphids equals 57,5 % of the body diameter, in the female it measures only 30 % of the same diameter. Both amphids are situated at the lower border of the oral cavity. The latter is rather deep, 1,9 times as deep as its greatest width. It is divided into two equal portions : a vestibulum without strongly cuticularized walls and a proximal portion with the diadem consisting of 12 longitudinal ribs. Oesophagus cylindrical. Cuticle distinctly ringed, each ring with 4 transverse rows of fine points. Behind the amphids some fine setae. Ocelli small, on a distance equal to 4 times the length of the buccal cavity from the anterior border in the female sex, and to 5 times this length in the male sex. Female tail elongate conical with a distinct spinneret. Caudal lip of the anal opening swollen. Length of the tail 5 anal diameters long, male tail 4,7 anal diameters long. Genital armature consisting of a rather slender gubernaculum with bluntly truncate distal end and a bluntly pointed dorsal prolongation. Length of the same 0,75 anal diameter. Spicula angular, with a straight proximal portion and a velate distal end. Length 1 anal diameter. Four praeanal papillae, the fore most at 3 anal diameters from the anal opening.

Genus PARACANTHONCHUS MICOLETZKY, 1924.

59. — **Paracanthonchus filipjevi** MICOLETZKY, 1924.

(Fig. 59, A, B.)

1 ♂, 1 ♀, from Villefranche « Baie de Lilong », sand. Depth 5 m.

Length : 1,456 mm; $\alpha = 20{,}1$; $\beta = 7{,}28$; $\gamma = 8{,}85$; V. = 60,5 %.

FILIPJEV's formula :

0	80	200	880	1292	1456 µ.
32		52	72	36	

FILIPJEV's ♀ measured : 1,3 mm; $\alpha = 22$; $\beta = 5$; $\gamma = 11$; V. = 51 %.

The head is distinctly set off from the rest of the body. Cuticle with prominent rings, each with, especially at the lateral borders, 4 rows of small points. Lateral fields indicated by the pores of the skin glands and the short setae. Labial papillae setose Crown of cephalic setae composed of 10 components, the paired submedian setae subequal in length, the longer ones 27,6 % of the corresponding cephalic diameter, whereas the shorter ones measure 22,8 % of the same diameter. Lateral setae equal in length to the shorter submedian setae. Buccal cavity deep, with at least 10 longitudinal ribs of the diadem. Just like FILIPJEV (1922) remarks the buccal cavity becomes cone-shaped posterior to the buccal tooth. Dorsal tooth pointed opposite to the amphids. The amphids, circular in outline, do present 5 ½ windings. Diameter of amphids 26,3 % of the corresponding body diameter. Nerve ring at 40 % of the oesophageal length. Tail elongate conical, sharply pointed to the tip, with three caudal glands in tandem position. Length of tail equal to 3,32 anal diameters. In FILIPJEV's female the tail measured 3,1 anal diameters.

GEOGRAPHICAL DISTRIBUTION : Black Sea among *Cystosira*, Villefranche.

FAMILY CHOANOLAIMIDÆ.

Genus COBBIONEMA FILIPJEV, 1922.

60. — **Cobbionema cylindrilaimoides** n. sp.

(Fig. 60, A-C.)

1 ♀, from Villefranche, off the « Pointe de la Gavinette », grey mud.

FILIPJEV's formula :

0	40	92	212	652	1292	1456 µ.
32			80	88	60	

Length : 1,456 mm; $\alpha = 16{,}5$; $\beta = 6{,}85$; $\gamma = ?$.

Since the anal cleft could not be located with certainty the γ could not be determined with accuracy. I doubt however if FILIPJEV has correctly placed

the anal opening of his species quite near the beginning of the narrowing of the tail. The present species and *Cobbionema acrocera* Filipjev differ especially in the structure of the second portion of the buccal cavity which is here in the possession of particularly thick walls, which apparently may be drawn outwardly at the articulation point, by means of the musculature of the anterior bulb, thus affording a vigorous chewing mechanism for animal preys (other nemas ?).

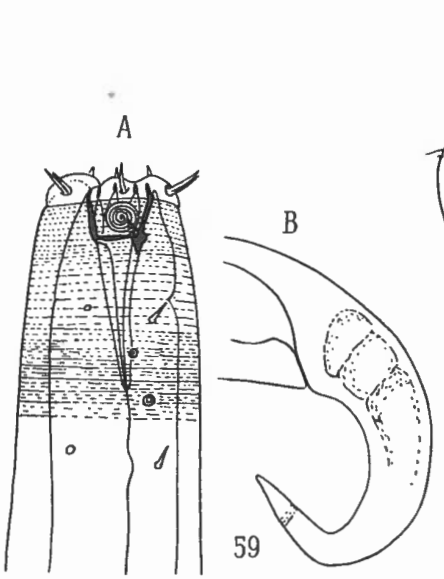

Fig. 59. — *Paracanthonchus filipjevi* Micoletzky.
A : Female head end.
B : Tail.

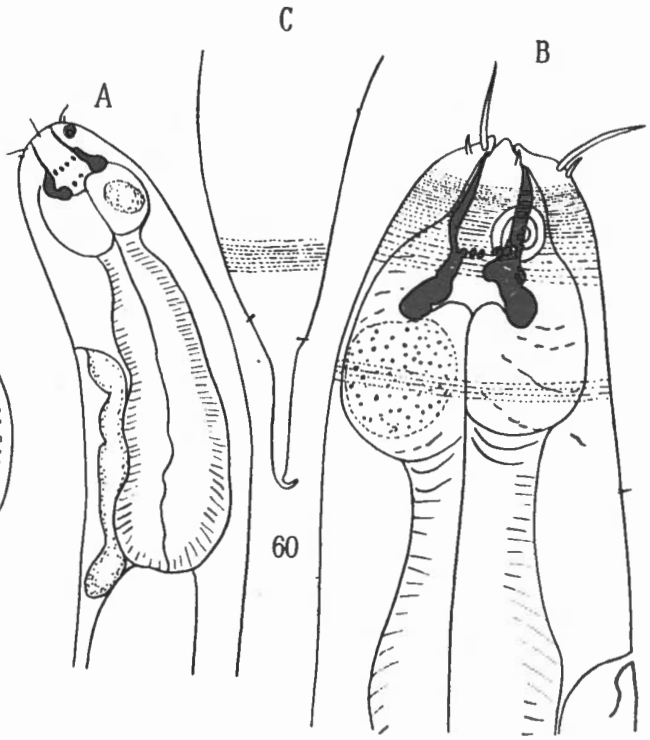

Fig. 60. — *Cobbionema cylindrolaimoides* n. sp.
A : Head end with œsophagus.
B : Anterior head end. C : Tail.

Head portion narrowing to the fore border, bluntly conical, rounded at its anterior end. Cuticle regularly dotted with transverse rows of points. Amphids almost circular in outline, spiral in structure, with 4 ½ windings, opposite to the anterior portion of the buccal cavity, their diameter measuring 26,9 % of the corresponding body diameter. Crown of cephalic setae anterior in position. There are 10 setae in total, the shorter submedian hairs and the lateral setae are very short and of the same size, whereas the longer submedian hairs surpass the shorter ones by far in length. Longer submedian setae measuring 68 % of the corresponding cephalic diameter, whereas the shorter submedian and lateral setae measure only 19,4 % of the same diameter.

Buccal cavity long and complicate, just like in other representants of the same family. The anterior portion which occupies 66 % of the whole cavity is cylindrical, bordered by thick cuticularized walls. These walls are prolongated backwards into broad, sinuous, thick cuticular bars, which serve the attachment of the pharyngeal musculature, which fills up the swollen pharyngeal bulb or corpus pharyngis, which is sharply set off against the isthmus. Posterior portion of the buccal cavity more or less triangular. On the brink between anterior and posterior portion of the same we find a row of denticular corpuscles, like *Halichoanolaimus* also possesses. Lips in the shape of protuberances. The oesophagus begins to swell again almost immediately behind the short isthmal attenuation, till it attains its greatest width at the junction with the intestine. Ventral gland short and broad, opening halfways the oesophagus by means of an excretory pore. Tail conical with a long pointed prolongation, that ends with a curved spinneret. Some minute setae are found at the beginning of the terminal point.

Typical for the genus is that the longer submedian setae apparently belong to a more anterior crown of sensory organs than the shorter setae, which build up a posterior crown, composed of exactly six components. The labial papillae, which probably were not seen because of their small size form the third crown. Here the crown of 4 cephalic setae is situated between the crown of labial sensory organs and the crown of six cephalic short setae, opposite to what we find in the genus *Dignathonema*, where the crown of 4 longer elements is situated posterior to that of the six shorter setae, which proves again that there exists a shifting of the sensory organs along the head, and that the crown of 10 elements in the *Cyatholaimidæ* is due to fusion of the two last crowns of 6 and 4 elements each.

GEOGRAPHICAL DISTRIBUTION : Mediterranean and Black Sea.

Genus CHEIRONCHUS COBB, 1917.

Syn. genus DIGNATHONEMA FILIPJEV, 1922.

61. — **Cheironchus macramphis** n. sp.

(Fig. 61, A-F.)

1 ♂, 1 juv. from Villefranche, off the Station, coarse sand under vegetation of *Posidonia*. Depth 15 m.

Length : ♂, 2,560 mm; $\alpha = 30,5$; $\beta = 12,8$; $\gamma = 32$.

FILIPJEV's formula : $\frac{0 \quad 200 \quad M \quad 2040 \quad 2480}{48 \quad 72 \quad 84 \quad 64}$ 2560 µ.

Length of the ♀ of FILIPJEV's *Dignathonema bulbosum* : 4,340 mm;
$\alpha = 40$; $\beta = 19$; $\gamma = 56$.

FILIPJEV has only seen a female of his species, so that the male brings a wellcome addition to our knowledge of the genus.

Head bluntly truncate to slightly pointed at its anterior end. Lips with minute labial papillae. Further two crowns of cephalic setae, an anterior crown consisting of 6 short conical, papilliform cephalic setae that measure 16,6 % of the corresponding cephalic diameter and a crown of 4 rather long cephalic hairs, which are 42 % of the corresponding diameter long. In total we have

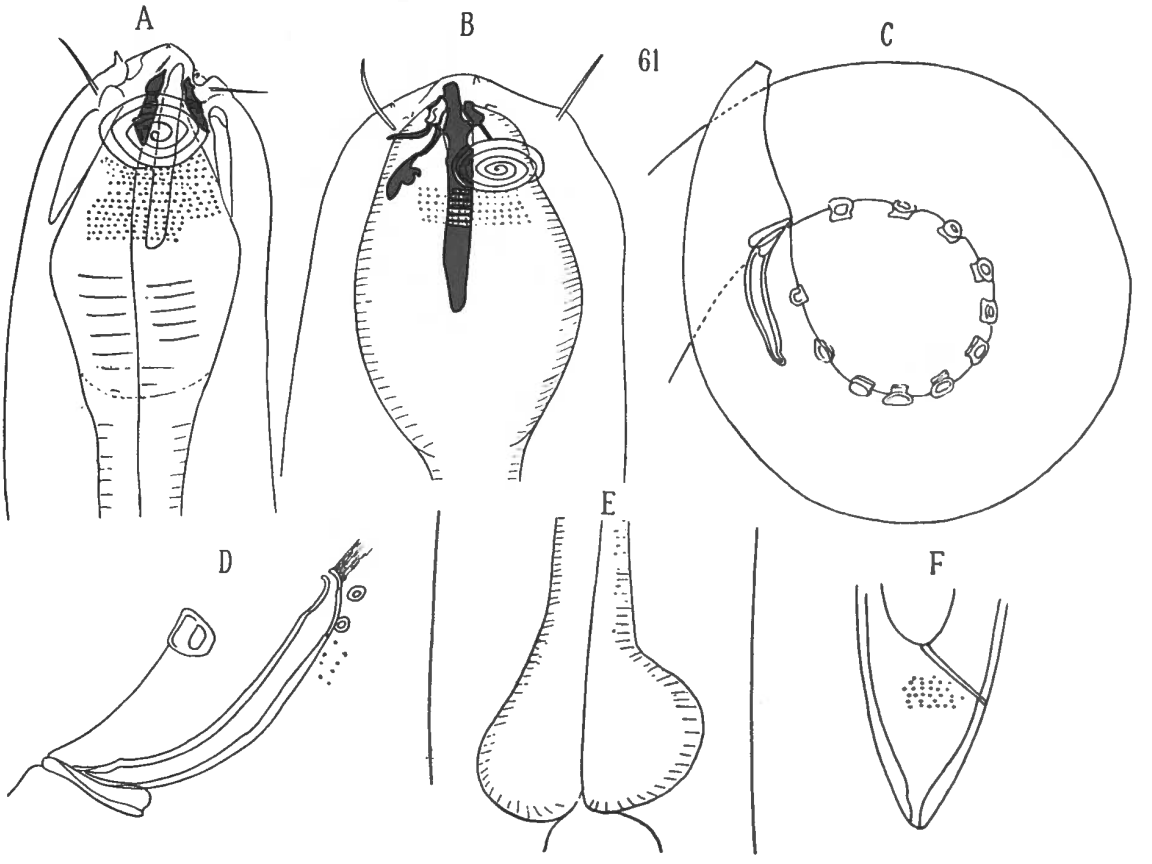

FIG. 61. — *Cheironchus macramphis* n. sp.
A B : Head end. C : Male tail. E : Male genital armature. E : Base of œsophagus.
F : Tail of larva.

therefore 3 crowns of cephalic sense organs. Cuticle dotted with small points, placed in transverse rows. Body setae almost totally absent. Amphids very broad, distinctly elliptical, with 4 ½ windings, their diameter 54 % of the corresponding body diameter. Buccal cavity apparently not very deep, since the cavity is partly filled up with the buccal armature, consisting of two large jaws, placed in the lateral plane. These jaws are supported at each side by small prongs, or secondary jaws, which bear at their distal ends irregular club-shaped thickenings. At each side apparently two such prongs are to be found.

Pharyngeal portion of the oesophagus elliptical, swollen, strongly muscular. Isthmus long and narrow. Posterior end of oesophagus sudden becoming bulbar again. Tail short, conical, 1,285 times the anal diameter, truncate at the spinneret. Spicula angular, curved, with a small proximal knob, 1,31 times the anal diameter long. Gubernaculum small, triangular. There are 12 praeanal papillae, the most anterior of which is situated at 5,85 anal diameters from the cloaca.

The present species differs from the nearly related *Dignathonema bulbosum* FILIPJEV [*Cheironchus bulbosus* (FILIPJEV)] in that the longer submedian cephalic setae are distinctly longer in *macramphis* than in *bulbosus* (FILIPJEV). Further the amphids are much larger and elliptical, whereas the general outline of the same structures in *bulbosus* is almost circular, like is also the case in *Dignathonema norvegicum* ALLGÉN [*Cheironchus norvegicus* (ALLGÉN)], which was depicted by ALLGÉN (1940) after a female with invaginated head end. This species was insufficiently depicted and described. If the shape of the tail is taken into consideration it should be remarked, that this shows far greater resemblance with that of our *Cobbionema cylindrolaimoides* than with that of a *Cheironchus* species, where the tail is short and blunt. As far as the buccal cavity is regarded, ALLGÉN's figure lets us quite in doubt, how it was structured in reality. Did ALLGÉN really see the peculiar jaws, typical for that genus, or was the buccal cavity more cylindrical ? This we urgently want to now before it is possible to make a final conclusion.

Genus TROGOLAIMUS COBB, 1920.

The genus *Trogolaimus* is more or less intermediate between *Halichoanolaimus* and *Cobbionema*. The buccal cavity consists of two spaces, the first of which is cylindrical like in *Cobbionema* (in COBB's *Trogolaimus uniformis* it was cyathiform, but this may be due at least mainly to the fact, that in this specimen the buccal cavity was disclosed), whereas the walls of the second space are strengthened by a number of rodlike longitudinal cuticularized ribs, like we find these in *Halichoanolaimus*. I counted 6 of these. COBB has found no more than 3. The bars are, like COBB remarks, crowned with curved cusps. A cuticularized transverse band holds the longitudinal bars together at the junction between first and second portion of the buccal cavity and serves at the same time the attachment of the muscles. There is a distinct pharyngeal bulblike swelling. Tail conical at base, ending in a filiform portion just as in *Halichoanolaimus*. In *Trogolaimus uniformis* COBB describes the tail as cylindrical tapering towards the rounded or conoid terminus. In his specimen the tail was therefore differently shaped from that in the present form. Further differences are found in the papillashaped structure of the cephalic setae in COBB's form, whereas the same setae are distinctly hairshaped in ours and in

the absence of body setae in our form, whereas Cobb's species presents distinct cervical setae placed backwards from the spiriform amphids. These differences are however not great enough to separate the present form from the genus *Trogolaimus* and to bring it to a new genus.

62. — **Trogolaimus micramphis** n. sp.

(Fig. 62, A, B.)

1 juv. spec. from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

Length : 1,712 mm; $\alpha = 33$; $\beta = 6,3$; $\gamma = 8,55$.

Filipjev's formula :

$$\frac{0 \quad 40 \quad 100 \quad 272 \qquad 1512}{32 \qquad\qquad 52 \quad 52 \quad 36} \quad 1712\ \mu.$$

Head bluntly conical at its anterior end. No prominent lips. The lips are closed in the specimen depicted in figure 59 *a*. Labial papillae short, conical. A crown of 6 bluntly conical more or less papilliform setae surround the head. These setae measure 15,2 % of the corresponding diameter. Cuticle with transverse rows of dots, quite like in *Halichoanolaimus*. Buccal cavity with an anterior cylindrical portion, bordered by uniformly cuticularized walls. Its length is 27,7 % of the whole length of the buccal cavity. The walls of this portion are structured as in *Cobbionema*. Follows a row of toothlike corpuscles, these being 6 cusps, which form the prolongations of the longitudinal cuticularized bars, that strengthen the second buccal space. These 6 in number apparently function with their cusps as a chewing apparatus. The whole is enveloped by a pharyngeal bulb. Amphids circular, rather small, composed of 2 ½ windings and measuring 22,5 % of the corresponding body diameter. They are situated opposite to the beginning of the posterior buccal cavity. Sideways, i.e. to the dorsal and ventral side this anterior portion of the buccal cavity is anchored into the pharyngeal bulb by cuticular prongs. Tail conical at its basal 42 %, then filiform, rounded at apex, 5,7 anal diameters long.

Genus HALICHOANOLAIMUS De Man, 1886.

63. — **Halichoanolaimus filicauda** Filipjev, 1918.

(Fig. 63, A-C.)

1 ♂, 1 ♀, 1 juv. from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

Length : ♂, 2,420 mm; $\alpha = 33,2$; $\beta = 8,1$; $\gamma = 7,1$.

Filipjev's formula :

$$\frac{0 \quad 280 \quad M \quad 1940 \quad 1980}{40 \quad 68 \quad 68 \quad 60 \quad 60} \quad 2420\ \mu.$$

Filipjev's : ♂, length : 3,1 mm; $\alpha = 38$; $\beta = 10$; $\gamma = 9$.

Length : ♀, 2,28 mm; $\alpha = 28,5$; $\beta = 8,1$; $\gamma = 9,5$.

FILIPJEV's formula :

$$\frac{0 \quad 280 \quad 1080 \quad 2040}{40 \quad 70 \quad 80 \quad 40} \quad 2280\ \mu \quad V. = 48{,}5\ \%$$

FILIPJEV's : ♀, length : 3,1 mm; $\alpha = 25$; $\beta = 8$; $\gamma = 7$; V. = 45,5 %.

In the dimensions there is a clear conformity between FILIPJEV's data and mine. As for the details our specimens answer rather well to the figures and description FILIPJEV has given.

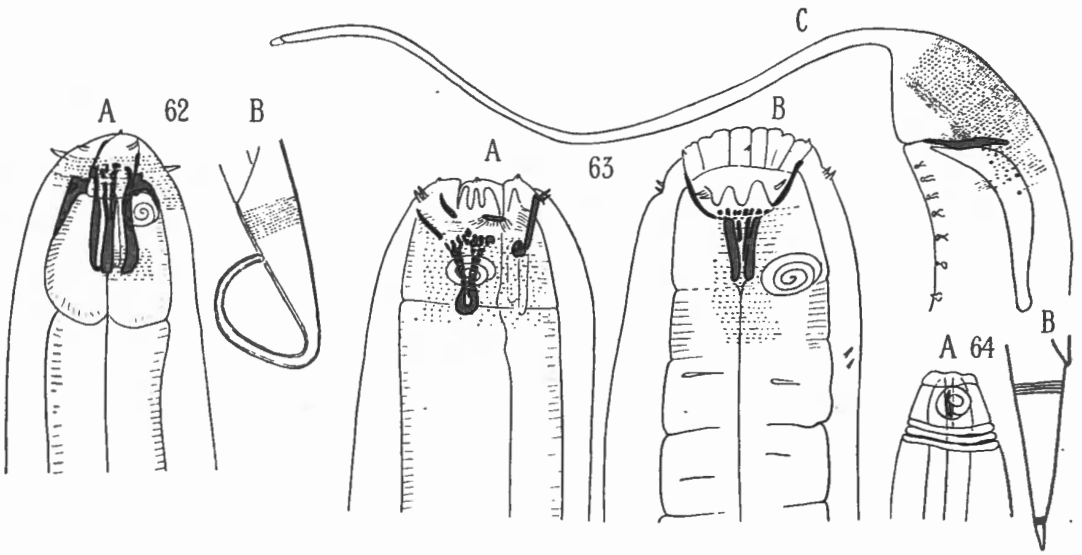

FIG. 62. — *Trogolaimus micramphis* n. sp.
A : Head end.
B : Tail.

FIG. 63. — *Halichoanolaimus filicauda* FILIPJEV.
A : Juvenile head end. B : Female head.
C : Male genitale armature and tail.

FIG. 64. — *Desmodora pontica* FILIPJEV.
A : Juvenile head end. B : Tail.

The amphids are in the present species however more elliptical than in FILIPJEV's specimens. Head rounded anteriorly with six lips, which bear a short papilla each. Crown of cephalic setae transformed into a crown of ten papillae. Amphids with 3 ½ windings, situated opposite to the caudal portion of the buccal cavity; their width 24,2 % of the corresponding cephalic diameter. Buccal cavity wide, caliciform, its vestibulum with vigorously cuticularized walls is followed by a row of toothlike corpuscles and a bundle of caudal rods near the bottom of the buccal cavity. Male genital armature consisting of a curved spiculum, slightly attenuated but not knobbed towards the proximal end, pointed distally. Chord of the same 1,38 anal diameters. Gubernaculum short, plate-like 0,69 times the anal diameter. At least 7 praeanal papillae. Basal tail portion 12,5 % of the whole tail length. Filiform portion 87,5 % of the same. Length of tail equal to 6,22 times the anal diameter.

Allgén, who synonymizes Filipjev's *H. filicauda* and Ditlevsen's *longicauda* (1940), says (1935) to have found this species in the Oeresund. His specimens from the Oeresund are however not only much smaller, but differ as well in the shape of the amphids, which are more circular than in *filicauda*, as in the shape of the tail, which gradually tapers and not suddenly narrows like in *filicauda*. So I am inclined to consider the specimens of Allgén's *H. filicauda* from the Oeresund as to belong to a species different from Ditlevsen's *longicauda* and apparently Allgén comes to the same conclusion in 1940. The Oeresund species should be called *Halichoanolaimus allgéni*. Further I am not in accordance with Allgén's synonymisation of *filicauda* with *longicauda*. The spicules of the larger-sized *longicauda* are broadest at their proximal end, tapering gradually towards the tip; in *filicauda* we find the broadest portion in the middle. *H. longicauda* is in the possession of 5 indistinct praeanal papillae, here we find 7 rather distinct praeanal papillae, in *longicauda* the amphids are more circular, here more transverse, although this difference may stay in relation with the state of fixation. At any rate the amphids are composed of a greater number of windings in *filicauda* than in *longicauda*. Similarly the gubernaculum of both species differs. So I come to the conclusion that we have to consider both species as different. Recently Allgén (1942) found near Banyuls-sur-Mer some juveniles from a *Halichoanolaimus* species which undoubtedly belong to *H. filicauda* Filipjev. De Coninck (1942) states to have studied material from the same species from Cap Martin near Menton.

Geographical distribution : Mediterranean, Black Sea.

Family **DESMODORIDÆ.**

Genus DESMODORA De Man, 1889.

64. — **Desmodora pontica** Filipjev, 1922.

(Fig. 64, A, B.)

1 juv. from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

Length of this juvenile : 1,18 mm; $\alpha = 24{,}6$; $\beta = 8{,}4$; $\gamma = 11{,}9$.

Filipjev's ♀ measured : 1,6 mm; $\alpha = 27$; $\beta = 8{,}5$; $\gamma = 13$.

Filipjev's formula :

$$\frac{0 \quad 140 \cdot 1060}{16 \quad 48 \quad 40} \quad 1180\ \mu$$

The head in our specimen is truncated anteriorly, but apparently the head of Filipjev's specimen had been withdrawn partly into the interior. Here one may distinguish between a lip region and an amphidial region. No setae or cephalic papillae were observed. As for the remainder my specimen answers to

the figure FILIPJEV has given from his animal. Cuticle with broad simple rings, the rings being narrower towards the caudal end. No body setae visible. Anterior labial head region demarcated by a suture line. This portion embraces 22,2 % of the whole head region of the body. The suture line runs quite in front of the amphids which are of circular outline and build a spiral, consisting of a single winding only, their width 52 % of the corresponding body diameter. Oral opening rather narrow leading into the oesophagus by means of a cylindrical canal. Dorsal tooth rather distinct, no indications of ventral teeth were found. Tail elongate conical, pointed to the tip. Spinneret distinct. Tail, 3 anal diameters long. Although FILIPJEV remarks in respect with his specimen that the tail equals 2,3 anal diameters in length, his figure 12 *c* proves that the tail of his female measured 3,55 anal diameters, which is in accordance with what the present specimen shows. In FILIPJEV's female however the diameter of the amphids was distinctly smaller than in the present specimen (which might eventually be a potential male) and moreover the oral cavity of his specimen was distinctly wider and more cyathiform than in the present specimen, which fact eventually might be due to differences in conservation and contraction of the related musculature of the buccal cavity.

GEOGRAPHICAL DISTRIBUTION : Mediterranean, Black Sea, Kaukasus, Krim.

65. — **Desmodora macramphis** n. sp.

(Fig. 65, A-F.)

I am quite sure that the specimens described under this heading are not identical with *D. pontica* from the Black Sea neither with the specimen identified by me as such from the same surroundings. They have also some resemblance with *Desmodora varioannulata* KREIS but in that species the tail is distinctly more short in relation to the body length than in our species. In the present species the amphids were even slightly larger than in the specimens described as *D. pontica,* which was in the possession of larger amphids than FILIPJEV's own specimens showed.

The present material did contain the following specimens :

1 juv. from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

3 ♀♀ from Villefranche, off the Station, coarse sand under vegetation of *Posidonia*. Depth 15 m.

2 juv. from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

3 ♂♂, 1 ♀, 2 juv. from Villefranche, off the « Vieux Villefranche », black mud. Depth 20 m.

The larva from the Point de la Gavinette enabled me to get the most accurate informations about the structur of the head portion. It is of the same texture as that of *pontica*, since it possesses two distinct portions, an anterior cephalic portion demarcated against the second or amphidial portion

by a distinct although shallow constriction. The labial cap is slightly swollen, bears on the lips in total 6 labial setiform papillae, and a crown of 4 cephalic setae, each measuring 23 % of the corresponding cephalic diameter. Amphidial portion 74,2 % of the total length of the head portion, therefore almost quite as deep as in the foregoing species, where this portion measured 77,8 % of the whole head. The amphidial portion bears the large amphids, a spiral with a little more than 1 winding. They are nearly circular in outline and measure in diameter 48,2 % of the corresponding body diameter. At the level of the lower half of the amphids a second crown of 4 hairs is to be seen, apparently the third crown of cephalic sense organs, which the genera of the Chromadoroidea do possess. These setae do not surpass 7,15 % of the

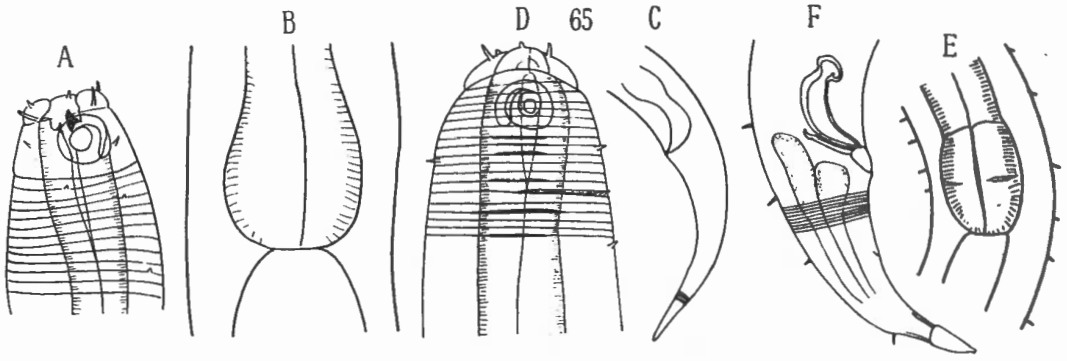

Fig. 65. — *Desmodora macramphis* n. sp.
A : Female head end. B : Base of œsophagus. C : Tail. D : Male head end.
E : Base of œsophagus. F : Male tail.

corresponding body diameter in length. The body itself is distinctly ringed, the bands are separated by shallow grooves. Here and there small setae are scattered, apparently placed more or less in longitudinal rows.

Similar hairs are seen on the tail portion as well, but here they seem to be slightly longer than more forward.

Buccal cavity beginning with a wide, spacious thin-walled vestibulum, followed by a more or less cyathiform buccal pit. Here a distinct, rather strong dorsal tooth is visible and a finer, even more pointed ventral tooth. At the posterior end it is swollen to a bulb-like portion, which neither is very pronounced nor very large. Tail elongate conical, 3,8 times as long as the anal diameter in the same juvenile.

Spinneret rather long, sharply pointed.

Dimensions of the juvenile in question :

Length : 1,512 mm; $\alpha = 31{,}5$; $\beta = 7{,}85$; $\gamma = 12{,}6$.

Filipjev's formula :

$$\frac{0 \quad 192 \quad 1392}{20 \quad 44 \quad 48 \quad 32} \quad 1512\ \mu.$$

The corresponding male differed in so far from the juvenile specimen that here apparently the amphidial portion was withdrawn and retracted into a cuticular fold, so that the amphids are crossed by cuticular rings. But since in this specimen discovered at the Vieux Villefranche the distribution of the cephalic sense organs as well as the shape of the amphids was almost identical to that of the aforementioned juvenile, I have not hesitated to bring both to the same species, although there existed some minor differences, as for instance in the longer and denser pilosity in the male, whereas this male was likewise in the possession of a comparatively longer oesophagus than the juvenile specimen possessed.

Dimensions of the male in question :

Length : 1,352 mm; $\alpha = 31$; $\beta = 4{,}75$; $\gamma = 15{,}4$.

FILIPJEV's formula :

$$\frac{0 \quad 24 \quad 284 \quad M \quad 1264}{28 \quad\quad 64 \quad 48 \quad 40} \quad 1352\ \mu.$$

Cuticle bearing rows of more or less regularly placed short, widely spaced bristles, particularly numerous at the anterior and posterior body end. Head not quite distinctly visible. Only the labial portion can be traced with some exactness, although we are not able to study the interior of the oral cavity in order to ascertain the distribution and structure of the buccal teeth.

Labial setiform papillae as well as the first row of cephalic setae just as in the foregoing juvenile. Amphids large, more or less circular, with a central dot — not visible in the juvenile — and with about 1 ½ winding. Width of the amphids 43,2 % of the corresponding diameter. Oesophageal bulb not very pronounced, less circular, more oval, with a protoplasmatic slit in the middle which subdivides the bulb body but not the internal covering of its interior.

Male genital organs much like in *pontica*. Spicula boomerang-shaped strongly knobbed at their proximal end, rather bluntly pointed distally, just as long as the anal diameter. Gubernaculum rod-like proximally, widened at its distal end. 0,68 times as long as the anal diameter. Tail 2,55 times as long as the anal diameter, therefore shorter and broader than in the forementioned juvenile.

In a female from the locality off the « station » the tail measured 3,2 times the anal diameter and in a juvenile between the « Lazareth » and « anse passable » it was 3,4 times as long as the anal diameter. Therefore the length of the tail may apparently vary to some extent.

The species in question is allied as well with *D. pontica* as with *D. microchæta* ALLGÉN, from which it however may be distinguished inter alia by the size of the cephalic setae, which are longer in the latter species.

66. — **Desmodora coniseta** n. sp.

(Fig. 66, A, B.)

1 ♂, from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

The species in question is distinguished from the foregoing to which is shows much resemblance by the size and shape of the cephalic setae, which are really conical, the minuteness of the labial papillae, the even still larger size of the amphids, which appear longer than broad, in reality however are

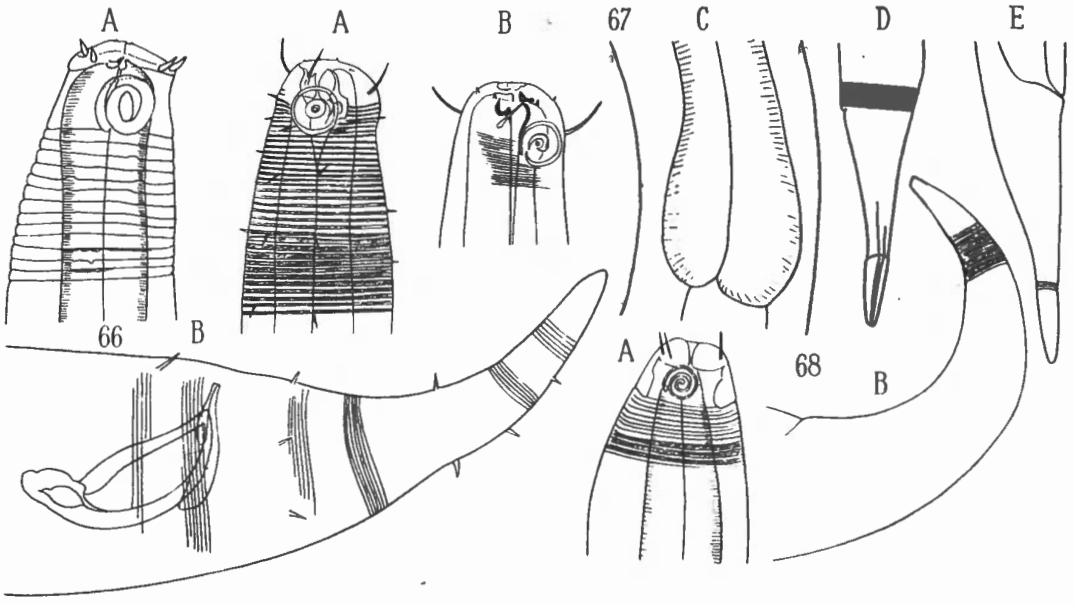

Fig. 66. — *Desmodora coniseta* n. sp.
A : Male head.
B : Male tail.

Fig. 67. — *Paradesmodora cephalata* n. sp.
A, B : Heads end. C : Base of œsophagus.
D, E : Tail ends.

Fig. 68. — *Heterodesmodora dillevseni* Micoletzky.
A : Female head end. B : Tail.

likewise almost circular like in the foregoing species. But here they cover almost the whole length of the amphidial head portion, whereas there remains a distinct space between fore and hind borders in the forementioned species.

Length of the male : 1,508 mm; $\alpha = 25$; $\beta = 6{,}78$; $\gamma = 17{,}2$.

Filipjev's formula : $\frac{0 \quad 168 \quad 228 \quad M \quad 1420}{28 \quad\quad 52 \quad 60 \quad 28}$ 1508 µ

Head end rounded. Labial portion 27,5 % of the whole cuirass. Labial papillae very minute. The four coniform setae measure 18,7 % of the corresponding diameter. Amphids circular, 1 ½ winding, their width 51,5 % of

the corresponding diameter. Posteriorly they touch to the first transverse cuticular groove. Rings broad in front, more narrow posteriorly. Buccal cavity not very distinctly to be seen, but apparently with a dorsal and a ventral tooth. Oesophageal bulb occupying 38 % of the whole oesophagus.

Genital armature consisting of bow-shaped spicula, knobbed at their proximal end, almost as long as the anal diameter. Gubernaculum a shallow gutter, 0,59 % of the anal diameter. Tail elongate conical, 2,24 anal diameters long, covered with rows of hairs. Spinneret rather short, titter-like.

Genus PARADESMODORA n. gen.

The present genus may be distinguished from *Desmodora* in that we do not find the vigorous head capsule present in the typical Desmodoras. The head portion is comparatively short and is not divided into two portions, a labial region and a cephalic region, separated by a suture line, like we find it in *Desmodora*. The amphids are large, cryptospiral, their lower half embedded in the body rings, such in contradistinction with *Desmodora* where the amphids are found on the cephalic capsule. Apparently we find 6 cephalic setae against 4 in *Desmodora*. Buccal capsule with teeth.

67. — **Paradesmodora cephalata** n. sp.

(Fig. 67, A-E.)

1 juv. ♀, from Villefranche, off the Station, coarse sand under vegetation of *Posidonia*. Depth 15 m.

The head has a more *Acanthopharynx*-like outlook. It is bulbar, swollen, distinctly shorter than broad. The amphids are large circular, apparently cryptospiral in structure, at their lower half embraced by the body rings.

Length: 1,668 mm; $\alpha = 32$; $\beta = 8{,}35$; $\gamma = 18{,}9$; V. = 57,5 %.

$$\frac{0 \quad 200 \quad 960 \quad 1580}{24 \quad 46 \quad 52 \quad 40} \quad 1668\ \mu.$$

Oral opening circular, rather wide, surrounded by 6 small conical papillae. The cephalic setae are long, measure 43,5 % of the corresponding cephalic diameter, and are situated at a level with the fore border of the amphids. The latter circular in outline, composed of at least 3 cuticular rings, which are apparently connected and make the whole a cryptospiral structure, which then consists in 2 ½ windings (compare fig. 62 *a* and *b*). Diameter of the amphids equal to 45,3 % of the corresponding body diameter. Buccal capsule shallow, vestibulum short, pit strongly cuticularized with distinct dorsal tooth. Body rings beginning at the equator of the amphids, rather broad. Body setae, placed in longitudinal rows. Tail conical, 2,55 times as long as the anal diameter ornated with some short setae.

Genus HETERODESMODORA Allgén, 1932.

68. — **Heterodesmodora ditlevseni** (Micoletzky, 1922).

(Fig. 68, A, B.)

1 ♀, from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

Length : 1,42 mm; $\alpha = 27,3$; $\beta = 8,9$; $\gamma = 14,2$; V. = 53,5 %.

Structure of the head, amphids, size of setae, length of tail and all features as in Micoletzky's specimens. The head capsule is composed of two portions, separated by a circular groove. The cephalic setae, 10 in number, placed just anterior to the said groove, their length 33 % of the corresponding diameter. Tail 3,65 anal diameters long. No buccal tooth. Skin finely ringed.

Geographical distribution : Villefranche, Adriatic (Rovigno, Meleda, Cattaro), Suez.

Genus ACANTHOPHARYNX Marion, 1870.

This is indeed one of the most difficult genera of the *Desmodora*-Group, because we do possess so few figures from its representants and because the different representants can only be distinguished after subtile characters, as do they resemble each other very much.

Micoletzky mentions to have found 2 species only : 1. *Acanthopharynx micans* (Eberth) and 2. *Acanthopharynx perarmata* (Marion). He depicts only the first species. On no place in the litterature we do find exact figures and dimensions of *Acanthopharynx perarmata* Marion. So I think it advisable to give some additional figures of *Acanthopharynx perarmata* after a male specimen, observed by me at Naples, in order that furture workers on this field may have a holdfast for comparison. The two species observed near Villefranche both belong to new species the first *Acanthopharynx rigida* n. sp. is closely allied to *Acanthopharynx micans* (Eberth) and *Acanthopharynx setosissima* Schuurmans Stekhoven, the second *Acanthopharynx seticauda* shows greater affinity with *Acanthopharynx micramphis* Schuurmans Stekhoven if the male tail is regarded.

69. — **Acanthopharynx perarmata** (Marion, 1870).

(Fig. 69, A-C.)

I will bring here 2 figures of what I consider to be the male of *Acanthopharynx perarmata*. The figures fit well I think with those given by Marion and answer liewise to the description given from that male by Micoletzky (1924). The head is elongate conical, distinctly longer than it is broad at the base of the tooth. The cephalic cuirass is not very vigorous. There are 6 lips,

supported by cuticularized rods, and apparently bearing setiform labial papillae. This is the first row of cephalic sense organs. The head capsule is slightly constricted at a level with the foremost row of cephalic setae. I counted three such rows, of which the first two correspond with the 2 crowns of setae found in other genera compare *Croconema*, the upper row composed of at least 10 rather short setae, no longer than 19,3 % of the corresponding body setae, is situated at a level with the upper end of the buccal tooth. The second row is composed of ± 10 much longer setae, that measure 57 % of the

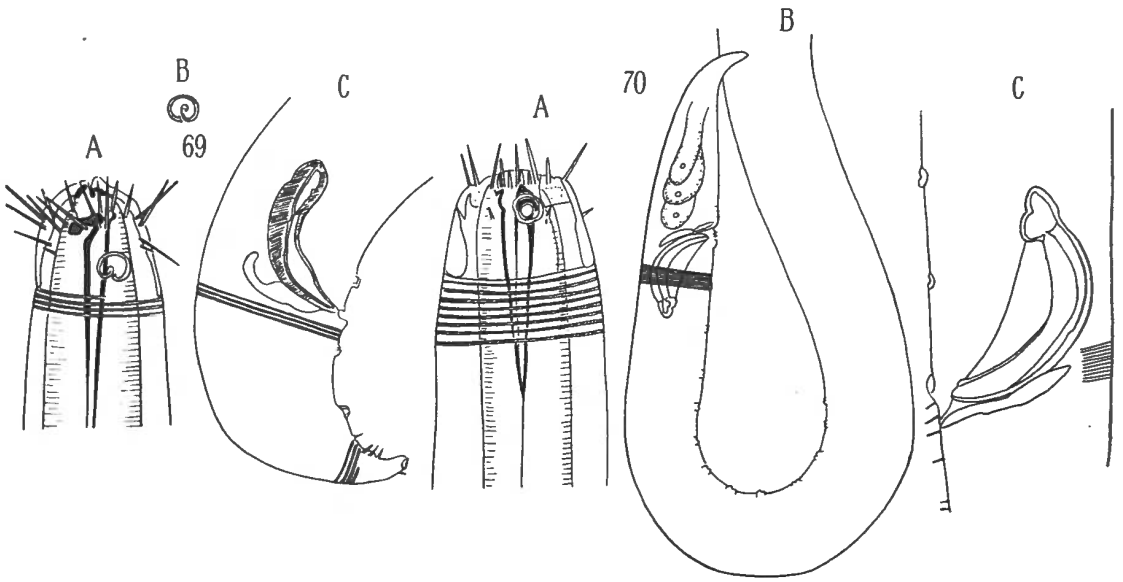

FIG. 69. — *Acanthopharynx perarmata* (MARION).
A : Head end of male.
B : Amphid. C : Male tail.

FIG. 70. — *Acanthopharynx rigida* n. sp.
A : Heed end. B : Male tail.
C : Male genital armature.

corresponding diameter. The third row is composed of a few setae only. It consists of no more than 4 long setae, placed slightly in front of the amphids. These setae are accompanied by shorter partners. The length of the longer setae equals 38,8 % of the corresponding cephalic diameter. Amphids cryptospiral, more or less circular in outline, their diameter 29 % of the corresponding cephalic diameter. In the shallow buccal cavity a large blunt dorsal tooth projects. This tooth has a distinct cavity. It meets a smaller tooth that projects from the ventral side. Anterior oesophageal portion not swollen like is the case in *A. setosissima* .

Male genital armature consisting in a vigorous spiculum, that is bluntly headed proximally, presents a longitudinal crest and ends distally in a rather blunt point. Spicular chord slightly longer than 1 anal diameter. Gubernaculum with proximal curved hook and distal plate, its length equal to 58 %

of the anal diameter. I found a single very distinct and prominent praeanal wart. Tail thick, curved ventrally, no longer than 1,8 anal diameter. There are 3 prominent wartlike excressences on the ventral side of the tail, the most apical one of these bears 3 setulae whereas a fourth seta is found in the middle between the second and third wart. Near the spinneret we find a dorsal seta quite under the tip of the tail. The ringing of the cuticle is rather fine.

Geographical distribution : Mediterranean, Naples, Marseille

70. — **Acanthopharynx rigida** n. sp.

(Fig. 70, A-C.)

1 ♂, from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*.

Dimensions :

♂ : 2,828 mm; $\alpha = 50,2$; $\beta = 6,79$; $\gamma = 23,5$.

Filipjev's formula :

$$\frac{0 \quad 24 \quad 416 \quad M \quad 2336 \quad 2708}{32 \qquad 52 \quad 64 \qquad 44} \quad 2828\ \mu.$$

Length of head 24 micra. Head rounded anteriorly, provided with a strongly cuticularized head capsule. The crown of cephalic setae is composed of ± 16 components of unequal size. We find unpaired lateral setae, situated in front of the amphids, whereas the submedian setae are paired, the couples being composed of unequal partners, the longer partners measure 39,4 %, the shorter ones 28,5 % of the corresponding cephalic diameter. A second crown of short cephalic respectively cervical setae is found at a level with the diameter of the amphids. These setae are very short and do not surpass 11,9 % of the corresponding body diameter. Amphids circular, with a large central dot, 25 % of the corresponding body diameter wide. Oral cavity shallow, the vestibular portion is supported by slender longitudinal ribs. It may however be that we must consider these lips as invaginated. In that case, what seemigly are the longitudinal ribs of the vestibulum, in reality have to be considered as the first crown of cephalic setae. Dorsal tooth vigorous, prominent, blunt, conical, reaching to the base of the vestibular diadem. This dorsal tooth is attached to the walls of the funnelshaped buccal cavity by means of a rodlike thickening of the oesophageal will. Subventral teeth inconspicuous.

Cuticle smooth, strongly ringed. There are 14 praeanal papillae, the most apical of which is separated 8,4 anal diameters from the anal opening. These papillae are almost equidistant. The first praeanal papilla is situated on the cephalic lip of the cloaca. Spiculum with proximal knoblike ventral prolongation, distal end blunt. Length of the velate spiculum equal to 1,3 anal diameter, the gubernaculum is only 0,84 anal diameter long. Male tail elongated

conical, not unlike that of the female of EBERTH's *Odontobius micans*, whereas the male tail of that species is much less slender. The male tail of our species is 3,14 anal diameters long, whereas the tail of EBERTH's female was 2,5 anal diameters long. I doubt if EBERTH's female belongs to the same species as his male and might ask if not his female and the present male are conspecific. Ventrally the tail of the present male is provided with some short setae. From *A. micans* as depicted by MICOLETZKY (1924) the present species differs by the shape of the tail and the number of praeanal papillae.

71. — **Acanthopharynx seticauda** n. sp.

(Fig. 71.)

1 ♂, from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus. Depth 3 m.

Dimensions :

♂ : 1,932 mm; $\alpha = 40{,}2$; $\beta = 6{,}46$; $\gamma = 27$.

$$\frac{0 \quad 300 \quad M \quad 1860}{32 \quad 48 \quad 48 \quad 44} \quad 1932\ \mu.$$

In many respects the male in question resembles that of *A. perarmata* as well as that of *A. micramphis* SCHUURMANS STEKHOVEN from Ibiza, but may be easily distinguished from both, because in *perarmata* there is only a single praeanal wart, whereas in *micramphis* no praeanal papillae were observed, but the tail is in the possession of a row of spines and warts on its distal half. In the present male of which I have only depicted the tail end we find 9 almost equidistant praeanal papillae. The anterior praeanal papilla is found at a distance equal to 5 anal diameters from the cloaca. Spiculum curved, pointed at its distal, headed at its proximal end. Gubernaculum a spade-shaped plate. Spicular chord 1,2 anal diameters long. Tail short and rather thick, swollen at its base, curved ventrally, terminating in a distinctly set off spinneret. Annulation fine. Ventrally as well as subventrally the tail distinctly shows a rather great number of fine spines. No postanal neither praeanal warts are visible. Length of tail equal to 2,4 anal diameters.

Genus CROCONEMA COBB, 1920.

KREIS (1928) has described as new a species of *Croconema*, brought by him to his new genus *Aculeonchus*. He named it *Aculeonchus sphæricus* KREIS. At a later date KREIS came to the conviction (in litteris) that his species should be reckoned to belong to the genus *Croconema* COBB 1920, so that it had to be called henceforth *Croconema sphæricum* (KREIS). *Croconema sphæricum* (KREIS) was recently (1942) found by ALLGÉN (1942) at Banyuls among *Posidonia*.

In 1926 Steiner and Hoeppli have described from Japan *Croconema mamillatum*. The type species *Croconema cinctum* Cobb came from Jamaica. To these species I can add a fourth, which I propose to call *Croconema longiseta*.

72. — **Croconema longiseta** n. sp.

(Fig. 72, A-D.)

5 ♂♂, 2 ♀♀, 1 juv. from Villefranche, off the « Vieux Villefranche », black mud and organic detritus. Depth 20 m.

Dimensions :

♂ : 2,756 mm; $\alpha = 38{,}2$; $\beta = 8{,}75$; $\gamma = 17{,}1$.

Filipjev's formula :

$$\frac{0 \quad 44 \quad 316 \quad M \quad 2576}{40 \qquad 72 \quad 72 \quad 64} \quad 2756\ \mu.$$

Dimensions :

♀ : 2,025 mm; $\alpha = 25{,}2$; $\beta = 6{,}75$; $\gamma = 14{,}4$; V. = 67,2 %.

Filipjev's formula :

$$\frac{0 \quad 52 \quad 300 \quad 1380 \quad 1880}{28 \qquad 68 \quad 80 \quad 40} \quad 2020\ \mu.$$

Cuticle vigorously ringed, except on the head, that presents a head capsule of moderate strength. Lips closed, crowned with 6 setiform papillae. Follows a crown of 6 short, thorn-like bristles, of which none is placed in quite lateral position. One may say this crown is composed of 4 sublateral + 2 submedian spines. A third crown of head sense organs is composed of apparently 10 elements of which 8 are paired and 2 are single. The peculiarity of this arrangment is, that again none of them is quite lateral in position. The paired setae are sublateral in position and do consist of a short conical hair and a rather long hair, staying next to the former and measuring 25 % of the corresponding body width. The short conical setae occupy a lateral position, in respect to the longer setae. In itself this arrangment of the paired hairs would not be peculiar if not the crown did consist of 10 setae of which the unpaired ones are placed in dorsal and ventral position. For in the common scheme we do find 6 groups of sense organs arranged round the head in such a way that the unpaired hairs occupy a lateral position, whereas the paired setae are submedian. It is not possible to bring the present arrangement into the general scheme, neither is it easy to understand that in the present case the third crown of 10 components would be the result of the fusion of the second and third crown of head sense organs, since the second crown is still present. At this place I may point to the fact, that we may find in the closely related genus *Acanthopharynx*, confer for instance *A. perarmata*, apart from a crown of labial sense organs, which are shaped as setiform papillae in the said species, 3 crowns of setae, 2 of which are found in front of the amphids. So we have

here too three crowns of cephalic sense organs, often composed of many elements. It is certainly worth while to make a further minute studies of the symmetry problem and of the distribution of these head sense organs.

Amphids spiral with a central dot, and 1 ½ windings, their diameter 22,25 % of the corresponding body diameter. Posterior to the amphids we find again crowns of hairs, i.e. just posterior to the amphids at either side of these a small seta, almost in straight line posterior to the small partners of

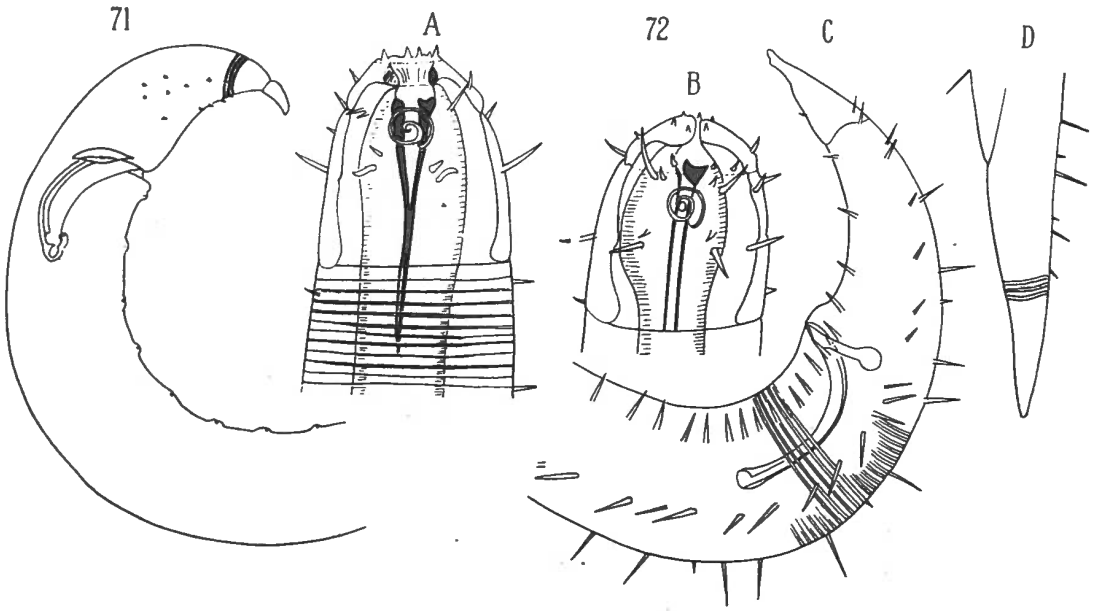

FIG. 71. — *Acanthopharynx seticauda* n. sp.
Male tail.

FIG. 72. — *Croconema longiseta* n. sp.
A : Female head end. B : Male head end. C : Male tail. D : Female tail.

the sublateral groups, wheras slightly more backward a crown of six longer setae is observed. Near the posterior end of the head a dorsal and a ventral small seta are found. (Confer likewise also DE CONINCK, 1942, p. 34.)

In respect with the arrangement of the setae there is still one point worth mentioning. In the *Enoploidea* we always do find a crown of head sense organs composed of 10 components, which like was shown can be explained as to be the result of the fusion of two crowns of head sense organs. This explanation does not fit here, like I showed above. Now in the *Enoploidea* the smaller partners of the submedian groups often are placed quite in front of the longer partners, or in the case they are placed next to them they are quite adjacent to the former, whereas lateral setae always are present. The absence of lateral setae as well as the sublateral position of the setae in the

present case leads me to read the pattern of setae as composed of either 6 or of 10 longitudinal rows. Cobb (1920) says in respect to *Croconema cinctum* there must be at least six irregular longitudinal rows of setae in the helmet, but it seems impossible to pick out any single circlet of these setae that particularly merit the term cephalic setae.

Steiner and Hoeppli (1926) have studied *Croconema mammillatum*, which presents a more regular arrangment of the setae and for this species they state that there are 10 cephalic setae (1 lateral, 2 sublateral and 2 submedian). Posterior to the amphids the setae are arranged in 6 longitudinal rows.

Croconema sphæricum (Kreis) from the Mediterranean possesses according to Kreis 10 longitudinal rows of short but stiff bristles, 4-5 in each row, whereas, just as in the present case the body cuticula possesses only 6 rows of setae.

In *Croconema longiseta* the body presents 6 rows of longitudinal rather long and stiff bristles, whereas on the head we find an arrangment which is intermediate between 6 and 10, posterior to the amphids there are quite certainly no more than 6 rows, the crown placed just in front of the amphids is composed of 10 components, whereas the first crown of cephalic setae possesses only 6 bristles. So at any rate the number 6 prevails and the supposition lays at hand that where there are 10 components they are placed on tops of cells, duc to fission of the 6 cells of the original scheme.

Body cuticle with broad rings, which are narrower to the tail end than in front, setae long and slender, stiff.

Oral cavity shallow, bottle-shaped. There is a prominent dorsal tooth. Anterior portion of oesophagus swollen to a kind of bulb, just like in *Croconema sphæricum* and *Cr. cinctum*, whereas this swelling is less pronounced in *Cr. mamillatum*. Spiculum slender, curved, hardly swollen at the proximal end, pointed at the tip, 1,23 anal diameters long. Gubernaculum building a short gain, and provided with a dorsal prolongation, which is swollen at its proximal end. The whole is 0,63 anal diameter long. No praeanal papillae nor mamilla like elevations of the cuticle. Tail elongated conical, tapering to a rather acute tip. Spinneret pronounced. Length of tail 2,45 anal diameters.

Female in most respects quite similar to the male. Here the lips are open and the vestibulum oris does show faint longitudinal ribs. Cuticular lining of the oesophageal walls thick. The arrangment of the cephalic setae was less distinct than in the male. From the first crown I have not seen the sublateral hairs, whereas the second crown apparently also possesses 10 components. The ante-amphidial portion of the head is distinctly set off against the post-amphidial portion of the same. Amphids larger than in the male, quite 30 % of the corresponding diameter. Tail 3,58 times as long as the anal diameter.

The present species may be clearly distinguished from the mediterranean species of KREIS by the arrangment of the cephalic setae, the distinctly longer pilosity of the body and the absence of praeanal warts in the male sex. The vulva in my species is distinctly more posterior than in KREIS species, which species are otherwise closey related.

Genus SPIRINA FILIPJEV, 1918.

73. — **Spirina rouvillei** n. sp.

(Fig. 73, A B.)

The present species is in a certain sense intermediate between FILIPJEV's *Sp. zosterae* and *Sp. sabulicola*. With *sabulicola* it has in common the disposition of th cephalic setae, although we may not forget that FILIPJEV's figure depicts an invaginated head end of that species. In both species the socalled cephalic setae are implanted at the caudal border of the amphids. The shape of the tail of the present species is however quite identical to that in *Sp. zosterae* and *Sp. parasitifera* (BASTIAN). The status of the species of *Spirina*, found by DE ROUVILLE (1904) near Cette remains uncertain. If his hitherto unpublished figure of that species is consulted, it is clear that the crown of cephalic setae is implanted at the fore border of the amphids, just as in the case in *Sp. parasitifera* and in the present species. Therefore I am inclined to identify DE ROUVILLE's specimens from Cette as *Sp. parasitifera*. With this species the present form is likewise closely allied. The body setae however, rather irregularly scattered over the oesophageal portion of the body of *Sp. parasitifera*, are minute in that species, whereas they are long and arranged in distinct longitudinal rows in the specimen from Cette, more or less so as in *Sp. lævis* (BASTIAN). The present specimens possess likewise distinctly longer setae than *Sp. parasitifera* has, DE ROUVILLE's female was however distinctly shorter than the females from *Sp. lævis* from more northern regions. It measures only 2,3 mm against 3,5-3,76 mm for the females of *Sp. lævis* from the North Sea and Baltic. In length our juvenile nears DE ROUVILLE's specimen, 2,148 mm against 2,3 mm for the female of DE ROUVILLE, whereas my female from Baie de Lilong near Villefranche measured 3,712 mm, so that this female falls in the range of variability of *Sp. lævis*, but possesses at the other hand distinctly greater amphids, which surpass in diameter even those of *Sp. parasitifera* (BASTIAN). It is of importance to pay particular attention to the head end. Here I could identify (confer fig. 68) a crown of 6 minute labial papillae, a crown of likewise 6 cephalic papilliform setae and a third crown of 6 long cephalic setae, placed at a level of the foreborder of the amphids. Often the head of these species is more or less invaginated, so that the loca-

tion of sense organs is difficult. For the mentioned reasons, it will be wise I think to treat the species in question as new. I proposed to call it *Spirina rouvillei* n. sp. The following specimens were found.

1 juv. ♀, from Villefranche, off the Station, under vegetation of *Posidonia*, coarse sand. Depth 15 m.

1 ♂, from baie de Lilong, sand. Depth 3 m.

Dimensions :

Juv. 1 ♀, length : 2,148 mm; $\alpha = 38{,}3$; $\beta = 14{,}1$; $\gamma = 18{,}5$.

FILIPJEV's formula :

$$\frac{0 \quad 120 \quad 152 \qquad 2032}{12 \qquad 52 \quad 56 \quad 44} \quad 2148\ \mu.$$

♀ 1, length : 3,712 mm; $\alpha = 40{,}3$; $\beta = 19{,}3$; $\gamma = 23$; V. = 46,4 %.

FILIPJEV's formula :

$$\frac{0 \quad 128 \quad 192 \quad 1712 \quad 3552}{16 \qquad 72 \quad 92 \quad 56} \quad 3712\ \mu.$$

Anterior attenuation of the body when compared with the hind end of the oesophagus 3,25 (juvenile)-4,5 (female).

Head bluntly rounded at the anterior end. Here there are minute labial papillae. Posterior to it 6 setiform cephalic papillae, and at a level with the posterior border of the amphids 4 submedian cephalic setae of comparatively great length, measuring 40 % of the corresponding diameter. Amphids circular, 1 ½ winding, their diameter 42-43 % of the corresponding body diameter. The pilosity of the anterior body portion is scanty, the setae are arranged in submedian longitudinal rows. Dorsal tooth minute. Oesophagus short, with caudal bulb, occuping 21 % of the total oesophageal length. Nerve ring at 66,8 % of the oesophageal length. Tail conical, 3,65 times as long as the anal diameter.

From *S. parasitifera* our species is distinguished by the longer and more regularly distributed body setae, by the longer cephalic setae, the larger amphids and the more posterior position of the nerve ring. It remains doubtful if DE ROUVILLE's specimen belongs to the present species, since the figure DE ROUVILLE has made after his specimen is far from beautiful and does not enable with certainty a correct identification.

Genus CHROMASPIRINA FILIPJEV, 1918.

The genus in question was brought by FILIPJEV to the Desmodoridae and I think in this he is right. In 1934 FILIPJEV synonymized with it the genus *Mesodorus* COBB 1920. The genus *Chromaspirina* is closely allied with *Spirina*, if we take in account the figure of *Chromaspirina pontica* like depicted by FILIPJEV. The shape of the amphids, the disposition of the cephalic setae reminds that in *Spirina*. At the other hand the dorsal tooth in *Chromaspirina*

pontica is more like in *Desmodora* and *Paradesmodora*. We miss however the typical ringing of the cuticle, found in these genera. The tail as well as the genital armature of *Spirina* and *Chromaspirina* do resemble each other to a great extent. As for *Mesodorus*, here the distribution of cephalic setae is more *Acanthopharynx*-like. The amphids are not cryptospiral like in *Chromaspirina*,

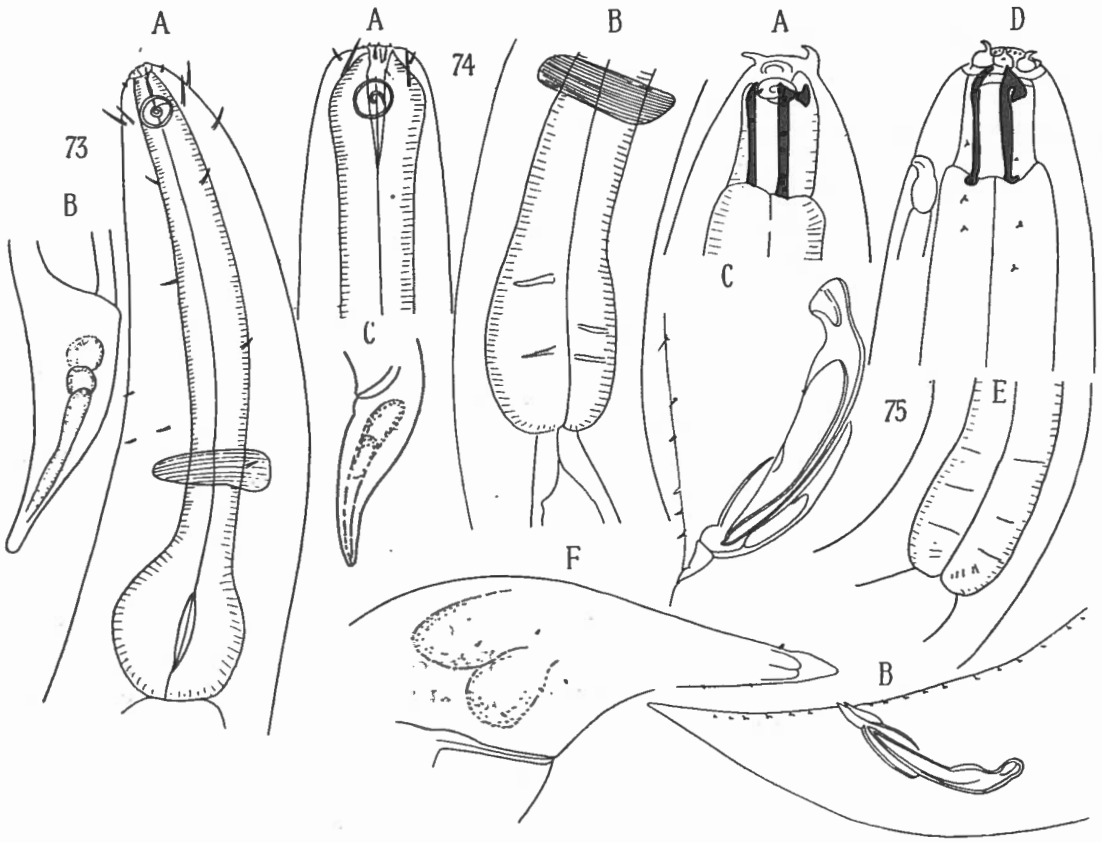

FIG. 73. — *Spirina rouvillei* n. sp.
A : Head end. B : Tail.

FIG. 74. — *Chromaspirina paucispira* n. sp.
A : Female head end.
B : Base of œsophagus.
C : Tail.

FIG. 75. — *Metachromadora longtlaima* n. sp.
A : Male head end. B : Male tail.
C : Male genital armature. D : Female head end.
E : Base of œsophagus. F : Female tail.

but distinctly spiral, but this needs not to be an essential difference, for in both we find a central dot. The number of the cephalic setae found to occur in each crown, differs from that counted in *Chromaspirina*. The anterior crown is after COBB (1920) composed of 12 labial papillae, follows a row of 6 cephalic setae, whereas the third crown is composed in COBB's *Mesodorus cylindricollis* of 14 elements. This latter number is difficultly to bring in accordance with that in *Chromaspirina pontica*. So I am in doubt if FILIPJEV is right in synony-

mizing both genera *Chromaspirina* and *Mesodorus* and if it would not be better to consider both as separate genera, which are distinct like for instance *Desmodora* and *Acanthopharynx* which resemble each other likewise in many respects.

74. — **Chromaspirina paucispira** n. sp.

(Fig. 74, A-C.)

1 ♀, from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

Dimensions :

♀ : 3,54 mm; $\alpha = 59$; $\beta = 17,7$; $\gamma = 43,8$; V. = 62,3 %.

$$\frac{0 \quad 200 \quad 2200 \quad 3460}{30 \quad 40 \quad 60 \quad 40} \quad 3540\ \mu.$$

Head end truncate, with distinct labial papillae, at least 6 in number. A crown of 6 short cephalic setae, no longer than 20 % of the corresponding cephalic diameter and a third crown of 4 submedian cephalic setae, each measuring 41,5 % of the corresponding body diameter. Cuticle pale brownish in colour, without distinct transverse striae. Amphids spiral, composed of 2 ½ windings, diameter of the same 46,5 % of the corresponding diameter. Buccal cavity with a vestibulum, presenting longitudinal cuticular folds, metastome conical, likewise with longitudinal folds. At the brink of mesostome and metastome I find the indication of a dorsal tooth, which however is much less distinct than in *Chromaspirina pontica*. Oesophagus swollen at the oral end, embracing the whole buccal cavity. At the posterior end a bulbar swelling is observed. Ovaries double with three well developed eggs each. Tail short, 1,65 anal diameters long, bluntly ending, conical in shape, containing 3 caudal glands in tandem position.

Genus METACHROMADORA FILIPJEV, 1918.

75. — **Metachromadora longilaima** n. sp.

(Fig. 75, A-F.)

1 ♂, 4 ♀♀, 4 juv. from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

2 ♂♂, 1 ♀, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

Length : ♀, 1,204 mm; $\alpha = 14,4$; $\beta = 4,87$; $\gamma = 15,2$; V. = 56,8 %.

FILIPJEV's formula :

$$\frac{0 \quad 36 \quad 248 \quad 684 \quad 1124}{20 \quad\quad 76 \quad 84 \quad 44} \quad 1204\ \mu.$$

Length : ♂, 1,120 mm; $\alpha = 14,75$; $\beta = 4,5$; $\gamma = 14$.

$$\frac{0 \quad 36 \quad 248 \quad M \quad 1040}{20 \quad\quad 76 \quad 76 \quad 44} \quad 1120\ \mu.$$

Length : juv., 1,088 mm; $\alpha = 13,6$; $\beta = 4,24$; $\gamma = 13,6$.

$$\frac{0 \quad 32 \quad 256 \quad M \quad 1008}{28 \qquad 68 \quad 80 \quad 44} \quad 1088\ \mu.$$

♂. Head bluntly rounded anteriorly, with complicate lips that bear setiform papillae. Head set off by a cuticular band. Vestibulum thin walled. Oral cavity deep, cylindrical, thick walled, with a prominent, vigorous, pointed tooth. Amphids in the shape of a transverse spiral in diameter, 43,5 % of the corresponding diameter. Oesophagus only slightly enlarged posteriorly. Excretory pore at lower end of buccal cavity. Genital armature consisting of comparatively slender spicula, 1,48 anal diameters long, with a knobbed proximal end and a swordlike distal end. Gubernaculum gutter-shaped at the proximal end, pointed distally. There is a medioventral row of 11 praeanal setae or setiform papillae, similarly a row of 6 postanal setiform papillae. Tail conical, pointed to the apex. Length of tail 1,9 times as long as the anal diameter. In the female the tooth was longer than in the male sex. Moreover we find on the body submedian rows of short minute setae allover the body running from the head end to the tail. Here the tail was 1,77 times as long as the anal diameter.

76. — **Metachromadora papillata** n. sp.

(Fig. 76, A-D.)

1 ♂, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

Length : ♂, 1,208 mm; $\alpha = 16,8$; $\beta = 6,05$; $\gamma = 13,8$.

FILIPJEV's formula :

$$\frac{0 \quad 24 \quad 120 \quad 200 \quad M \quad 1120}{24 \qquad\qquad 64 \quad 72 \quad 40} \quad 1208\ \mu.$$

Closely allied to the foregoing species with a sharply demarcated head end, short and narrow spiral amphids, a strong dorsal tooth. Length of tail 2,3 anal diameters. Genital armature consisting of a gutter-shaped gubernaculum, running posteriorly to about 2/3 the length of the spicula, whereas the anterior prolongation is very short, distal end of the same pen point-shaped. Spicula slender with a proximal knob, which bears a distal prolongation, that points to the anal opening. Praeanally we find 14 praeanal papillae, posterior to the anal opening neither anal setae, nor papillae are to be discerned.

By these characteristics the present form may be easily distinguished from *Metachromadora longilaima* S. S.

Family MONOPOSTHIIDÆ.

Genus MONOPOSTHIA De Man, 1889.

77. — **Monoposthia mediterranea** n. sp.

(Fig. 77, A, B.)

1 ♀, from Villefranche, off the Station, coarse sand under vegetation of *Posidonia*. Depth 3 m.

Length : ♀, 1,28 mm; $\alpha = 32$; $\beta = 6{,}69$; $\gamma = 12{,}79$; V. = 82 %.

Filipjev's formula :

$$\frac{0 \quad 152 \quad 192 \quad 1080 \quad 1180}{20 \qquad 40 \quad 40 \quad 24} \quad 1280\ \mu.$$

The specimen in question resembles very much *Monoposthia costata* De Man. Unfortunately we do possess no male of the same species and of the same locality, otherwise we could be rather sure about the identity of the species. It differs from *costata* in the distinctly greater length of the cephalic setae, which are 69 % as long as the corresponding cephalic diameter, in our species, whereas they are distinctly shorter in the specimens of *costata* from North Sea and Baltic. *Sp. costata* of the Black Sea possesses, when Filipjev's figure is consulted, cephalic setae that are half as long as the corresponding diameter and are therefore intermediate between those of the present species and that of the North Sea. The circular amphids measuring 21 % of the corresponding body diameter (13 % in *costata*) are situated in the third body ring. The buccal tooth is distinct and sharply pointed, longer than in *costata* and more prominent at the same time. Number of longitudinal rows of V-shaped interruptions of the cuticular annules distinctly less than in *costata*. Anterior portion of oesophagus bulbar, like in all other species of *Monoposthia*. Posterior bulbus equal in length to 20,8 % of the total oesophageal length. Vulva at the same spot as in the female of *costata*. Tail elongate conical with a blunt conical spinneret. Its length 3,9 times as long as the anal diameter [3,59 in the Black Sea female of *costata*, studied by Filipjev (1918-1921)].

Steiner's female from Teneriffa comes near to the present female not only in its dimensions which are almost quite identical, but apparently also in its structural features.

Length of Steiner's :

♀, 1,198 mm; $\alpha = 26$; $\beta = 6{,}8$; $\gamma = 11{,}5$; V. = 82,97 %.

Steiner (1916) points to the fact, that his specimen was distinctly smaller than those of the North Sea generally are, and that quite as in our specimen the annulation of the head end is not or almost not disturbed and deviated by the interruption caused by the amphids.

So I come to the conclusion that the specimens from Teneriffa and Villefranche belong to a separate species, for the latter of which I propose the name *Monoposthia mediterranea.*

In material from Ibiza I found a male, which might be the male of this species. It has a small circular amphid in the third body ring. The oesopha-

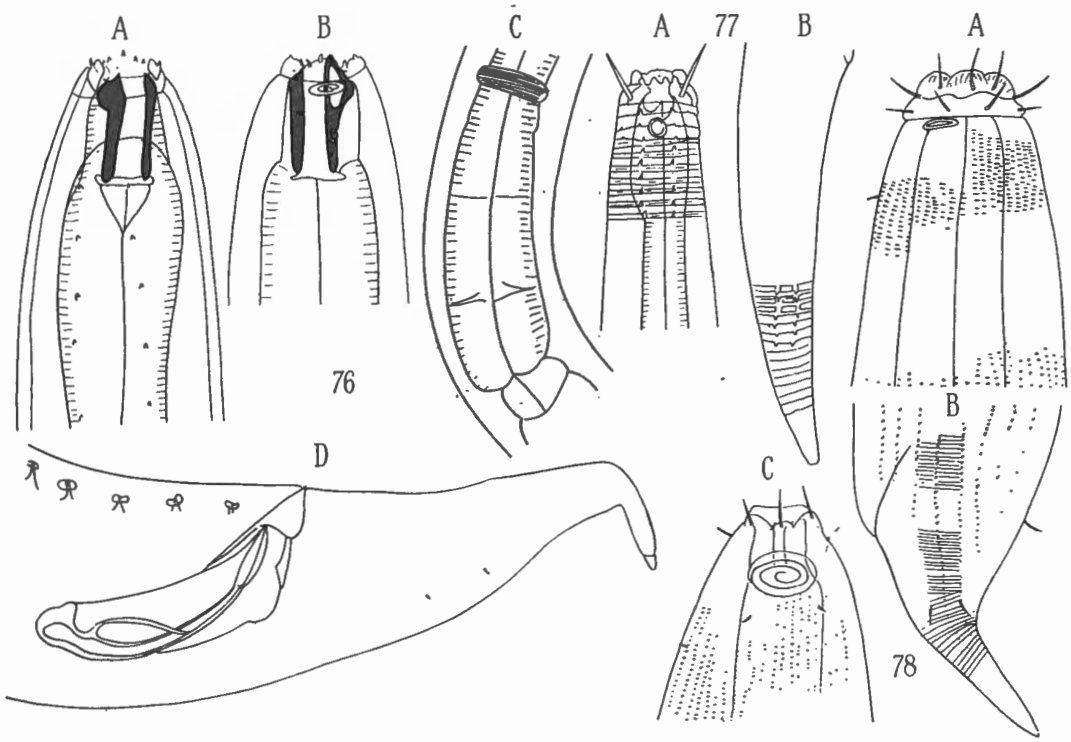

FIG. 76. — *Metachromadora papillata* n. sp.
A, B : Head ends. C : Base of œsophagus.
D : Male tail.

FIG. 77. — *Monoposthia mediterranea* n. sp.
A : Female head end.
B : Tail.

FIG. 78. — *Richtersia elongata* n. sp.
A : Head of female larva. B : Tail of the same. C : Head of male larva.

geal bulb occupies 28,3 % of the whole oesophageal length. The spicula are less curved than in the typical *costata.*

Length of that male : 1,332 mm; $\alpha = 33\ 3$; $\beta = 6{,}2$; $\gamma = 11{,}1$.

0	12	152	212	M	1212	1332 µ.
16			40	40	32	

In its dimensions the male may be in accordance with the female of Villefranche. So the same species apparently also occurs in Ibiza. ALLGÉN (1942) states to have found *M. costata* in Banyuls. Further comparison of material of Villefranche and Banyuls has to prove if ALLGÉN's conclusion is correct, and if ALLGÉN did not dispose of specimens of *M. mediterranea.*

Family RICHTERSIIDÆ.

Genus RICHTERSIA Steiner, 1916.

78. — **Richtersia elongata** n. sp.

(Fig. 78, A-C.)

1 juv. ♀ and 1 juv. ♂, from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

The species in question is closely allied to *R. demani* Schuurmans Stekhoven but may apparently be distinguished from the latter by differences in the shape of the amphids in the female sex, in the number of longitudinal rows of clawlike spines on the cuticle in both sexes, the more elongate tail and slight differences in the pubescence in the male sex.

Both specimens were juvenile forms, no genital organs being apparent, but easily distinguishable as belonging to either the female or the male sex by the shape of the amphids, which present sex dimorphism.

Length of the juv. ♂ : 0,532 mm; $\alpha = 7{,}4$; $\beta = 2{,}95$; $\gamma = 7{,}4$.
Filipjev's formula :

$$\frac{0 \quad 180 \quad 460}{16 \quad 72 \quad 44} \quad 532\ \mu.$$

Length of the juv. ♀ : 0,752 mm; $\alpha = 12{,}5$; $\beta = 2{,}77$; $\gamma = 12{,}5$.
Filipjev's formula :

$$\frac{0 \quad 272 \quad 692}{28 \quad 60 \quad 40} \quad 752\ \mu.$$

The dimensions of the juvenile females fall in the range of variation of *Richtersia demani* female, as for the male specimen the difference in its α and γ might be due eventually to a difference in development, but it seems to me that these differences are rather great to be pure growth differences and this combined with the greater number of longitudinal rows of spines brought me to create a new species for it.

Head in the female individual distinctly set off against the remainder of the body by a constriction, immediately in front of the amphids. Like in other species of the genus a second constriction separates lip region and lower head portion. Six distinct lips, with 6 setae. These setae are rather slender and measure 45,2 % of the corresponding diameter. Caudal head portion with a second crown of 8 setae, distinctly shorter that the anterior crown, only 17,5 % of the corresponding diameter in length.

Amphids more slit-like, probably a flat spiral, 30 % of the corresponding diameter. The shape of these amphids may be derived from those of *R. demani* by imagining that the opening of the amphids in *R. demani* has been diminished by dorsoventral pressure on the amphidial ring. The oral

cavity could not be studied. Near the head end there are at least 40 rows of cuticular spines, further downward this number diminishes to about 25. On the level of the anal opening the number is even less and seems to be no more than 20. Tail elongate conical more sharply pointed than in *R. demani*. Tail 2 anal diameters long, with some scattered setae. The distal point of the tail appears slightly longer than in *R. demani*.

Male larva with a much less pronounced head portion, hardly demarcated against the remainder of the body, with six indistinct lips and as many setae. The latter, 50 % of the corresponding diameter. Second crown of much smaller setae, 16,1 % of the corresponding diameter, consisting of 6 setae only. Amphids transverse spirals, with 3 ½ windings, diameters of the amphids, 51,2 % of the corresponding diameter. Posterior to the amphids 2 short but distinct setae were found.

Buccal cavity as such not studied, apparently folded together. Number of rows of spines like in the female about 40.

Family **CHROMADORIDÆ.**

Genus SPILOPHORELLA Filipjev, 1918.

79. — **Spilophorella euxina** Filipjev, 1918.

(Fig. 79, A-G.)

4 ♂♂, 3 ♀♀, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

1 ♂, 1 ♀, from Villefranche, baie de Lilong, sand. Depth 5 m.

Dimensions :

♂ 1, length : 1,356 mm; $\alpha = 26$; $\beta = 5,65$; $\gamma = 7,7$.

Filipjev's formula :

0	172	240	M	1180	
20		52	52	36	1356 µ.

♂ 2, length : 1,320 mm; $\alpha = 25,3$; $\beta = 5,88$; $\gamma = 7,49$.

Filipjev's formula :

0	148	160	224	M	1144	
16			50	52	40	1320 µ.

♀ 1, length : 1,248 mm; $\alpha = 26$; $\beta = 5,69$; $\gamma = 6,62$; V. = 46,5 %.

Filipjev's formula :

0	140	220	580	1060	
20		48	48	32	1248 µ.

♀ 2, length : 1,344 mm; $\alpha = 26$; $\beta = 5,8$; $\gamma = 7$; V. = 44 %.

Filipjev's formula :

0	160	232	592	1152	
20		40	52	32	1344 µ.

Filipjev's ♀, length : 0,97 mm; $\alpha = 18$; $\beta = 5,33$; $\gamma = 7$; V. = 46 %.

♀, from Mallorca, ♀ 1, 1,06 mm; $\alpha = 22,5$; $\beta = 4,4$; $\gamma = 6,6$; V. = 50 %.

Filipjev has only studied the female sex of the present species, so that the male is new to science.

Head of the male in question distinctly set off from the remainder of the body, rather soft-skinned, slightly swollen. Lips distinct bearing cephalic setae, that are as long as 30 % of the corresponding cephalic diameter. Labial papillae, 6 in number, minute and inconspicuous. Mesostom with a well developed diadem, metastom widened again with a well developed dorsal tooth,

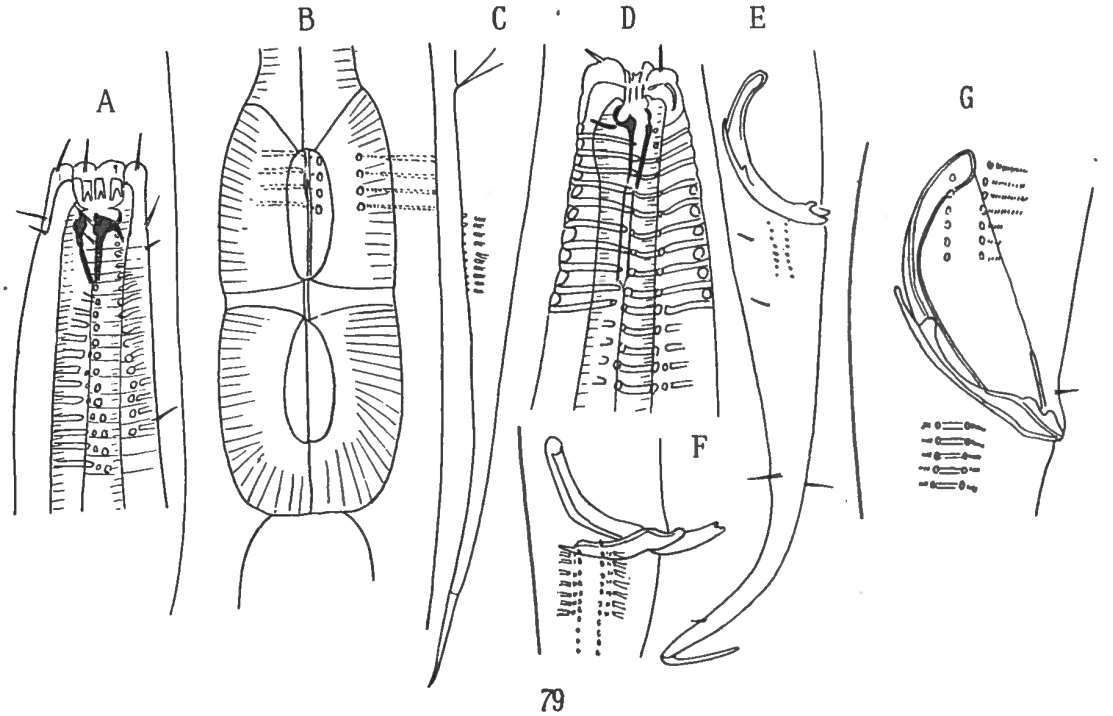

Fig. 79. — *Spilophorella euxina* Filipjev.
A : Female head. B : Base of œsophagus. C : Female tail. D : Male head.
E : Male tail. F, G : Male genital armature.

anchored into the wall of the oesophagus by means of a cuticular rod. Opposite to the said tooth there is a minute denticle at the entrance of the oesophageal cylinder. The latter distimctly swollen at the proximal end, provided with two separate bulbar swellings. Length of the bulbar portion of the oesophagus in a male 28,4 % of the oesophageal length, whereas it measured 30 % of that length in a female. Nerve ring at 63,5 % of the oesophageal length.

Cuticula with the lateral fields distinctly demarcated by large dots which are situated on comparatively broad rings. Width of the lateral fields 21 % of the corresponding body diameter near the anterior end, whereas the same measures only 16 % of the body diameter in the neighbourhood of the oeso-

phageal bulbs. Bulbs equal in size. Some scattered setae are found on the cuticle especially at the anterior end. At the level of the dorsal tooth one of the females presented a couple of setae of unequal length at each side of the body. Next to the lateral fields the cuticular annulations are stripe-like or broken into a number of fine dots.

The tail bears some scattered fine setae. No praeanal papillae seen. Spicula slender, velate. Chord 1,33 times as long as the corresponding anal diameter. Proximal part of the spicula with a club-shaped swelling, distal end bluntly pointed. Gubernaculum closely surrounding the distal end of the spicula with a proximal bifurcation and two tooth-like processes at the distal end. Tail slender, tapering to a fine needle-like spinneret. Length of the tail, 5,6 anal diameters. Length of spinneret 16 % of the tail length.

Female in general structure like the male. Cephalic setae, 45,5 % of the corresponding cephalic diameter. Tail very slender, 7 anal diameters long. Length of spinneret 15,7 % of the whole taillength, effilate.

The present species is easily distinguished from *S. dentata* G. SCHNEIDER to which it is closely related by the strong curvature of the spicula. The spicula and the gubernaculum are of equal structure as the same structures of *Spilophorella paradoxa* (DE MAN), but in the present species they are more strongly curved and moreover the proximal end of the same is swollen, whereas in *paradoxa* the proximal end is more attenuate and moreover the bulbs are of equal size in our species, whereas they are of unequal size in *paradoxa*. In general our description is in accordances with that of FILIPJEV. I am however quite sure that *Spilophorella euxina* is not identical with *Sp. paradoxa* like MICOLETZKY (1924) in his description of *Sp. paradoxa mediterranea* thinks. Another point is if not *Sp. paradoxa* var. *mediterranea* is identical with FILIPJEV's *euxina*. The structure of the oesophageal bulb which is composed of two unequal portions and the differences in the ornamentation of the skin and the structure of the buccal cavity seem to speak against this identity, whereas the species or form described by MICOLETZKY is not inconspicuously smaller than the present form. So I keep it for certain that *Sp. euxina* is a good species, the geographical distribution of which runs from Villefranche to the Black Sea.

80. — **Spilophorella mediterranea** (MICOLETZKY, 1924).

(Fig. 80, A, B.)

1 ♀, from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

Length : ♀, 0,876 mm; $\alpha = 24,2$; $\beta = 5,1$; $\gamma = 7,05$; V. = 44,9 %.

♀, from the Camargue, length : ♀, 0,680 mm; $\alpha = 22,5$; $\beta = 6,3$; $\gamma = 5,6$; V. = 47 %.

MICOLETZKY : ♀. 0,82 mm; $\alpha = 24,1$; $\beta = 5,36$; $\gamma = 6,85$; V. = 47,5 %.

FILIPJEV's formula ♀, Villefranche :

$$\frac{0 \quad 172 \quad 302 \quad 752}{16 \quad 36 \quad 36 \quad 20} \quad 876\ \mu.$$

The present female may be easily distinguished from the foregoing species by the fainter dental armature and development of the oral cavity, by the ornamentation of the skin, which is more like in *Sp. paradoxa* De Man, and by its smaller size, whereas it may be distinguished from *Sp. paradoxa* by the fact that both oesophageal bulbs are less distinct in size than in the latter species. I have not with certainty observed the set of small setae on the spinneret mentioned by Micoletzky but similar minute hairlets are found along

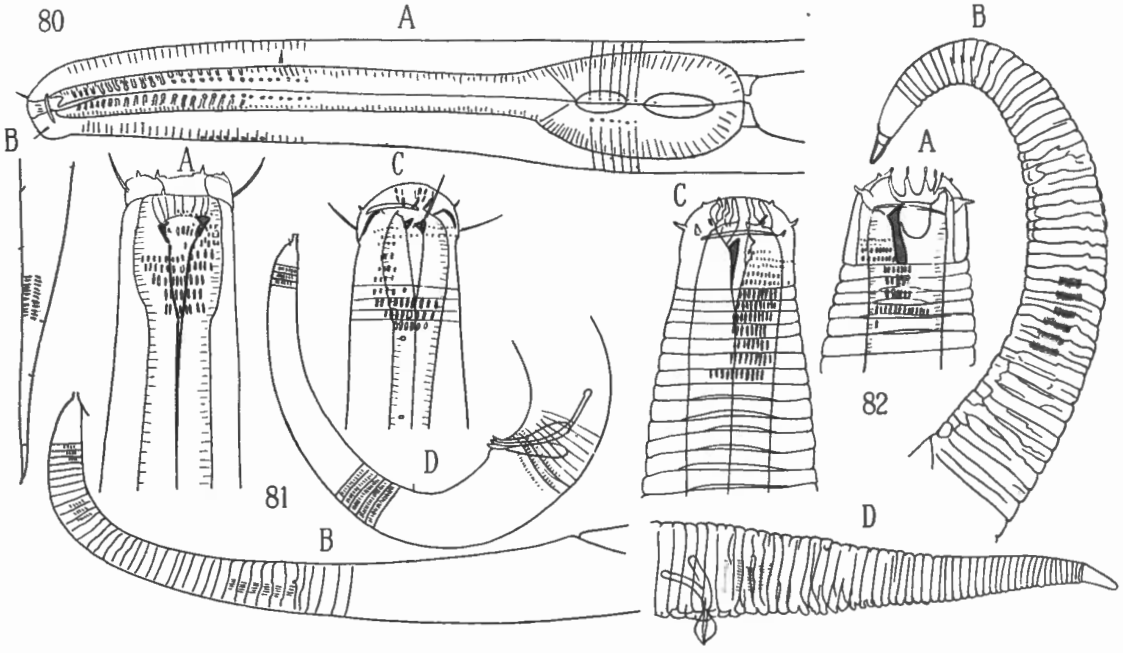

Fig. 80. — *Spilophorella mediterranea* (Micoletzky).
A : Female head end. B : Tail.

Fig. 81. — *Euchromadora africana* von Linstow.
A : Female head. B : Female tail.
C : Male head end. D : Male tail.

Fig. 82. — *Euchromadora inflatispiculum* n. sp.
A : Female head end. B : Tail.
C : Male head end. D : Tail.

the tail, so that I am convinced also from the observation of a female from the Camargue that my specimen is conspecific with Micoletzky's species to which I ascribe specific value.

Cuticula with cuticular rings, strengthened by transverse bars, beginning with the prominent dots which do border the lateral fields. The latter 15,6 % of the corresponding body diameter. To the dorsal and ventral side the bars are dissolved into rows of points. Head slightly swollen with cephalic setae, measuring 29,5 % of the corresponding cephalic diameter.

Amphids transverse, halfmoon-shaped slits, measuring 47,4 % of the body diameter. They are situated slightly in front of the dorsal tooth. Oral

cavity with a faintly plicated vestibulum. Dorsal tooth acute. Oesophageal bulb occupying together 37,5 % of the total oesophageal length, divided into 2 subequal bulbs. Tail elongate pointed, provided with a rather long spinneret. Length of tail 5,88 anal diameters. Tail beset with scattered minute setae. ALLGÉN (1942) does not recognize *S. mediterranea* as a valid species. He identifies it with *S. paradoxa* (DE MAN) and mentions this species from Banyuls. I am however convinced that the Banyuls specimens should be reckoned to *S. mediterranea*.

GEOGRAPHICAL DISTRIBUTION : Adria near Rovigno, Ombla Bay Melada, Bocche di Cattaro, near Naples and Ischia, Villefranche, Camargue.

Genus EUCHROMADORA DE MAN, 1886.

81. — **Euchromadora africana** VON LINSTOW, 1908.

(Fig. 81, A-D.)

4 ♂♂, 7 ♀♀, 3 juv. from Villefranche « Baie de Lilong », sand. Depth 5 m.

Length : ♂, 1,66 mm; $\alpha = 27,5$; $\beta = 5,92$; $\gamma = 9,2$.

FILIPJEV'S formula :

$$\frac{0 \quad 280 \quad M \quad 1480}{24 \quad 40 \quad 60 \quad 32} \quad 1660\ \mu.$$

Length : ♀, 1,944 mm; $\alpha = 23$; $\beta = 6,4$; $\gamma = 9,7$; V. = 49,6 %.

FILIPJEV'S formula :

$$\frac{0 \quad 304 \quad 564 \quad 1744}{24 \quad 48 \quad 84 \quad 32} \quad 1944\ \mu.$$

STEINER'S: ♂, from Teneriffa : 1,638 mm; $\alpha = 28,2$; $\beta = 5,9$; $\gamma = 8,5$.
♂, from Togo, Lome : 1,098-1,584 mm; $\alpha = 24,4\text{-}29,3$; $\beta = 4,5\text{-}6$; $\gamma = 8\text{-}9$.
♀, from Togo : 1,724-2,189 mm; $\alpha = 23\text{-}23,15$; $\beta = 4,5\text{-}6$; $\gamma = 8\text{-}9,9$.

Our specimens fall also fully in the range of variation of STEINER'S specimens.

The extreme head portion distinctly set off against the remainder of the body, is slightly swollen. Lips movable, therefore varying in outlook adorned with 6 setiform papillae, a second row of 6 cephalic papillae and a crown of 4 long and slender cephalic setae, which measure 47 % of the corresponding cephalic diameter in the male sex. Lower portion of the head with 3 transverse rows of distinctly spaced small points and rods. Immediately behind the head the rings are ornamented with hexagonal rods typical for the genus, and distinctly separate. Laterally one finds as far as I could see a single row of minute pores, undoubtedly the outlets of cuticular glands. Amphids halfmoon-

shaped, slitlike, their width 52 % of the corresponding cephalic diameter. Oral cavity with a distinct diadem, whereas the metastom bears not only a dorsal tooth, but also a single, probably even two subventral teeth. This seems to be in contradiction with the descriptions of STEINER (1916) and VON LINSTOW and also with the figure of the female given below, but this may be due I think to the side from which the animal was observed. Anterior oesophageal portion slightly swollen. Posterior end of oesophagus with an elongate bulb-like swelling, which is hardly indicated. Width at the head end 40 % of that in the middle of the body. Spicula slender, curved, pointed at their distal end, hardly swollen at the proximal end, their chord measuring 1,44 anal diameters. Gubernacula half the length of the spicula, broadly rounded proximally.

Length of tail 6,8 anal diameters. Spinneret with a short unilateral tube. Some fine setae are found on the tail, of which there is a single at the dorsal side of the spinneret.

In the female which I observed from a slightly different point of view I have only found a single dorsal tooth. Here the head was more expanded than in the male figured in figure 78 *a*, so that the three portions of the buccal cavity are clearly distinguished; a smooth vestibulum, a mesostom with its diadem and the metastom with its tooth at the junction between meso- and metastom. The lining of this conical part is strongly cuticularized. Length of the cephalic setae 43 % of the corresponding cephalic diameter.

Female tail 7,45 anal diameters long.

Although I have doubted a moment whether the male in question really did belong to the same species, the fact that both did occur at the same spot and moreover had so many points in common convinced me that both male and female are conspecific.

The species has a rather wide distribution and does occur as well in the Mediterranean as along the african coast. From the description MICOLETZKY (1924) has given from his specimens of *Euchromadora striata* and from my own observations after a female from Alexandria, it is clear that *E. striata* and *E. africana* have to be considered as separate forms. Remains however the possibility that MICOLETZKY has confused two species. Possibly DE CONINCK's *Euchromadora* sp. (1942) from Castiglione (Alger) belongs to the same species.

82. — **Euchromadora inflatispiculum** n. sp. SCHUURMANS STEKHOVEN, 1942.
(Fig. 82, A-D.)

1 ♀, from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

2 ♂, from Villefranche, off the « Vieux Villefranche », black mud and organic detritus. Depth 20 m.

The present species ressembles in certain points STEINER's *E. lüderitzi* because it possesses a rather long head capsule opposite to what we find in *E. africana* but the species may be easily distinguished by the fact that it has longer and sharper teeth. This fits as well for the dorsal tooth as for the subventral teeth. Further the cephalic setae and papillae are more conspicuous and thirdly we find at least 5 rows of points and bars on the cephalic portion which is distinctly set off by a cuticular constriction. Apart from the greater size it also differs by the swollen apex of the spicula.

Length of male : 3,120 mm; $\alpha = 41$; $\beta = 6{,}5$; $\gamma = 12{,}9$.
FILIPJEV's formula :

$$\frac{0 \quad 480 \quad M \quad 2880}{28 \quad 68 \quad 76 \quad 60} \quad 3120\ \mu.$$

Length of female: 2,760 mm; $\alpha = 34{,}5$; $\beta = 6{,}19$; $\gamma = 13{,}8$; V. = 45 %.
FILIPJEV's formula :

$$\frac{0 \quad 440 \quad 1240 \quad 2560}{28 \quad 72 \quad 80 \quad 56} \quad 2760\ \mu.$$

The head is sharply demarcated against the remainder of the body and of considerable length. It is bluntly rounded anteriorly and bears 6 blunt labial papillae. Cephalic setae, 6 in number, short, claw-like, measuring 11,4 % of the corresponding cephalic diameter. Amphids slit-like, very broad, 69,5 % of the corresponding body diameter. Diadem with thick longitudinal bars. Oral cavity with a sharply pointed dorsal tooth and 2 rather sharp subventral teeth. Oesophagus not swollen anteriorly. On the posterior half of the head one finds 5 transverse rows of dots and bars in the male, whereas I have seen only three of these rows in the female sex. Genital armature consisting of a nearly straight gubernaculum, which is only half as long as the corresponding body diameter and of slender spicula, distinctly inflated at their distal end. Length of the chord, 0,9 anal diameters. Tail gradually tapering to the spinneret, which is short and devoid of skin ornamentation. Length of tail, 4,15 anal diameters. Width at the beginning of the spinneret 16,6 % of the anal diameter. Female in general shaped as the male, the tail however more sharply pointed than in the male sex. Tail length equal to 6,05 anal diameters.

GEOGRAPHICAL DISTRIBUTION. — Mediterranean, Villefranche, Alexandria.

Genus HYPODONTOLAIMUS De Man, 1888.

83. — **Hypodontolaimus ponticus** Filipjev, 1922.

(Fig. 83, A-E.)

1 ♀, 3 ♀♀, from Villefranche, black mud and organic detritus, farther end of the « Porte de la Darse ». Depth 3 m.

1 ♂, 1 ♀, from Villefranche, grey mud between the « Lazareth » and the « Anse passable ». Depth 50 m.

4 ♂♂, 5 ♀♀, from Villefranche, grey mud, off the « Pointe de la Gavinette ». Depth 80 m.

Length : ♂ 1, 1,16 mm; $\alpha = 32$; $\beta = 5,48$; $\gamma = 9,05$.

Filipjev's formula :

$$\frac{0 \quad 144 \quad 212 \quad 1032}{20 \qquad 36 \quad 24} \quad 1160\ \mu$$

♂ 2, 1 mm; $\alpha = 27,6$; $\beta = 5,53$; $\gamma = 10$.

Filipjev's formula :

$$\frac{0 \quad 120 \quad 180 \quad M \quad 900}{20 \qquad 32 \quad 36 \quad 28} \quad 1000\ \mu$$

♂ 3, 0,996 mm; $\alpha = 24,9$; $\beta = 5,52$; $\gamma = 8,32$.

Filipjev's formula :

$$\frac{0 \quad 128 \quad 180 \quad 388 \quad M \quad 876}{16 \qquad 32 \qquad 40 \quad 32} \quad 996\ \mu.$$

♀ 1, 1,22 mm; $\alpha = 27,6$; $\beta = 6,08$; $\gamma = 9,5$; V. = 51 %.

Filipjev's formula :

$$\frac{0 \quad 140 \quad 200 \quad 620 \quad 1092}{20 \qquad 40 \quad 44 \quad 28} \quad 1220\ \mu$$

Filipjev's : ♀, 0,950 mm; $\alpha = 24$; $\beta = 5$; $\gamma = 6$; V. = 50 %.

♀ 2, 1,124 mm; $\alpha = 28,1$; $\beta = 6,1$; $\gamma = 9,38$; V. = 46,6 %.

Filipjev's formula :

$$\frac{0 \quad 124 \quad 184 \quad 524 \quad 1004}{16 \qquad 32 \quad 40 \quad 20} \quad 1124\ \mu.$$

1 ♂ from Mallorca length : 0,648 mm; $\alpha = 27$; $\beta = 4,05$; $\gamma = 8,5$.

The body is half as wide anteriorly than it is at the end of the oesophagus in the female sex, but slightly less attenuated in the male sex. Labial region of the head, capshaped, short, distinctly set off against the remainder of the body. Lips rather distinct, bearing 6 labial papillae and a crown of 4 short cephalic setae, not seen by Filipjev. Length of the same 40 % of the corresponding body-width in both sexes.

The head, that ends, where the regular cuticular annulations begin, is provided with a certain number of dots in two rows, beginning immediately

behind the amphids. These rows are continued on the rest of the body in the rows of dots, which demarcate the lateral fields. Amphids circular in outline, spiral in structure, measuring 24 % of the corresponding body diameter. Annules distinct, adorned with rows of dots, those adjacent to the lateral dots, smaller in size and more posteriorly shaped like minute bars. Width of the lateral fields on the oesophageal region 15,6 % of the corresponding body

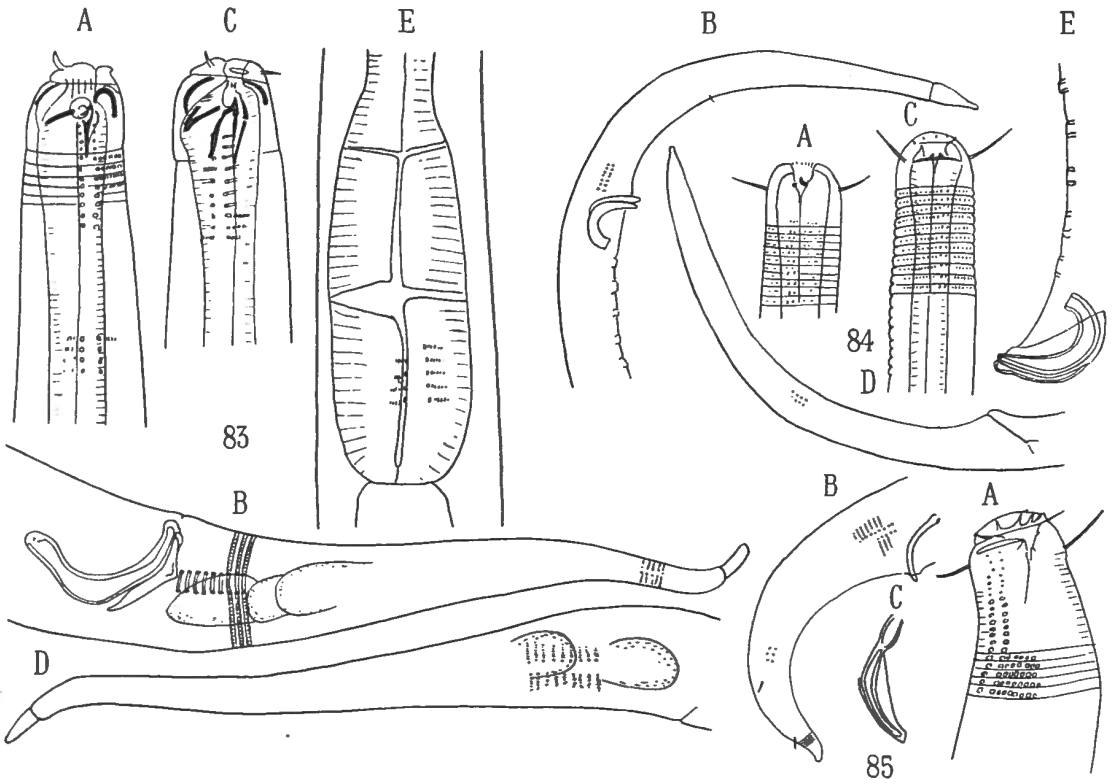

FIG. 83. — *Hypodontolaimus ponticus* FILIPJEV.
A : Male head end. B : Male tail.
C : Female head. D : Female tail.
E : Base of œsophagus.

FIG. 84. — *Dichromadora tenuicauda* n. sp.
A : Male head end. B : Male tail.
C : Female head end. D : Female tail.
E : Male genital armature.

FIG. 85. — *Dichromadora punctata* n. sp.
A : Male head end. B : Male tail. C : Spiculum and gubernaculum.

diameter in the female, 14,7 % of the same in the male sex. The dots demarcating the lateral fields are connected transversely by cuticular bars (fig. 83). Cuticular pores, next to the lateral fields scattered over the surface. Vestibulum oris surrounded by the lips. Diadem inconspicuous. There is a rather strong dorsal tooth, sharply pointed anteriorly and connected with the oesophageal wall by means of a rod. Ventral wall of the oral cavity thickened opposite to the dorsal tooth. This oesophageal region is, like in all other species of *Hypodontolaimus*, asymetrical in optical section.

Oesophagus with a rather long elongate not very prominent bulbar swelling with two protoplasmatic interruptions. Length of this bulbar portion 33 % of the total oesophageal length.

Genital armature, consisting of strongly curved spicula, that are blunt at their distal end. Spicular chord 1,06 anal diameters long. Gubernaculum notched, 78 % of the anal diameter. Tail length 4,45 anal diameters. Caudal glands 3 in number, in tandem position, spinneret fingershaped. Female tail 6,55 anal diameters long.

Geographical distribution : Black Sea, Mediterranean, Villefranche, Baléares.

Genus DICHROMADORA Kreis, 1928.

84. — **Dichromadora tenuicauda** n. sp.
(Fig. 84, A-E.)

1 ♂, 1 ♀, from Villefranche, baie de Lilong, sand. Depth 5 m.

Length : ♂, 1,264 mm; $\alpha = 53$; $\beta = 8,3$; $\gamma = 8,3$.
Filipjev's formula :

$$\frac{0 \quad 120 \quad 152 \quad M \quad 1072}{16 \quad\quad 20 \quad 24 \quad 24} \quad 1264\ \mu.$$

Length : ♀, 1,416 mm; $\alpha = 39,2$; $\beta = 7,7$; $\gamma = 7,08$; V. = 48 %.
Filipjev's formula :

$$\frac{0 \quad 184 \quad 676 \quad 1216}{16 \quad 20 \quad 36 \quad 20} \quad 1416\ \mu$$

The specimens in question greatly resemble those of *D. parapœcilosoma*. Their tail however is as well in the male as in the female sex considerably longer, especially if the relative length is taken into consideration, almost 10 anal diameters against slightly more than 5 anal diameters. Further there are inconspicuous differences in the genital armature and in the width of the lateral fields, which makes me conclude that we have to do with a distinct species, for which I propose the name *D. tenuicauda*.

Quite at the anterior end, which is bluntly rounded, we find the head portion, with a single row of transverse dots at its base. Here there is not yet an interruption of the rows of dots on the lateral fields, which is further on to be seen. There these are 14,3 % of the corresponding body diameter wide. The double row of dots is prolonged till on the tail. Head with minute labial papillae. Cephalic setae long and slender, 55 % of the corresponding cephalic diameter. Oral cavity undeep, with vestibular longitudinal ribs, a prominent dorsal tooth and less distinct subventral teeth. Both kinds pointed at their tips, the dorsal tooth having the shape of a curved prong. Oesophagus with elongate bulbus with three cuticular interruptions, the wole occupying 47,5 %

of the oesophageal length. End of excretory cell at 150 % of the oesophageal length from the anterior head end. Spicula very strongly curved, their chord as long as 1 anal diameter. Gubernaculum velate, platelike. I counted 5 praeanal papillae, the most caudal being situated just at the proximal end of the spicula, whereas the most anterior one is separated from the cloaca by a distance equal to 3 anal diameters. Tail long and slender, elongate, slightly swollen towards the tip, where one finds a conical spinneret. Length of tail in the male sex 8 anal diameters, in the female sex 10 anal diameters.

The present species shows close resemblance with *Neochromadora quinquepapillata* SCHUURMANS STEKHOVEN, but may be easily distinguished from the latter by the longer cephalic setae, the structure of the spicula and the more pronounced oesophageal bulb.

85. — **Dichromadora punctata** n. sp.

(Fig. 85, A-C.)

1 ♂, from Villefranche, off the Station, coarse sand under vegetation of *Posidonia*. Depth 15 m.

Length : ♂, 0,904 mm; $\alpha = 22{,}6$; $\beta = 6{,}88$; $\gamma = 7{,}5$.

FILIPJEV's formula :

$$\frac{0 \quad 104 \quad 132 \quad M \quad 784}{20 \qquad 36 \quad 40 \quad 32} \quad 904\ \mu.$$

The male in question is closely allied to *Dichromadora cricophana* (FILIPJEV) and likewise resembles *Chromadorella mytilicola* FILIPJEV. From the first species it may be easily distinguished by the much longer cephalic setae and the more blunt and short, less slender shape of the tail. From *Chromadorella mytilicola* it distinctly differs in the structure of the buccal cavity, in the size of the cephalic setae and in the ornamentation of the cuticula.

Head end bluntly rounded anteriorly. The head however is not in excellent condition, for we find an extrusion of the vestibulum with its longitudinal ribs. The head is not sharply demarcated against the remainder of the body. Labial papillae 6 in number, conical in shape, minute. Cephalic setae likewise 6 in number, long and fine, measuring 54 % of the corresponding body diameter. Oesophageal bulb 21,2 % of the total oesophageal length. Genital armature consisting of rather slender spicula, bluntly pointed at their distal end and enlarged tot an elongate tube at their proximal end. Curvature of the spicula not very vigorous. Spicular chord 0,84 anal diameter long. There is a velum or at any rate a membranaceous gubernaculum, that ensheathes the spiculum from the head end to the tip. No praeanal papillae seen. Tail rather plump and short, 3,6 anal diameters long, provided with a short spinneret and some scattered setae on its dorsal side.

Genus PROCHROMADORELLA Micoletzky, 1924.

From this genus two species are known from the Mediterranean, i.e. *Prochromadorella neapolitana* and *Prochromadorella mediterranea*. The present species resembles strongly *Prochromadorella mediterranea* Micoletzky. Opposite to what we find in that species the dorsal and subventral teeth are subequal, the cephalic setae are apparently shorter than in *mediterranea*, whereas there are 4 praeanal papillae in the place of 3, which needs not necessarily be an essential difference. Further we find a distinctly shorter tail, in comparison with the body length. Although we have to keep in mind, that further researches on mediterranean material, might prove, that the present

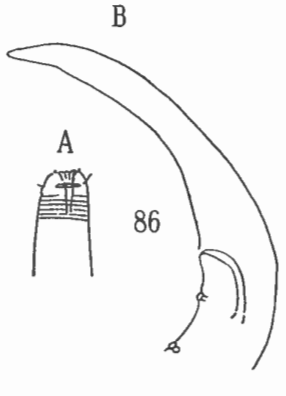

Fig. 86. — *Prochromadorella brachyura* n. sp.
A : Male head end.
B : Male tail.

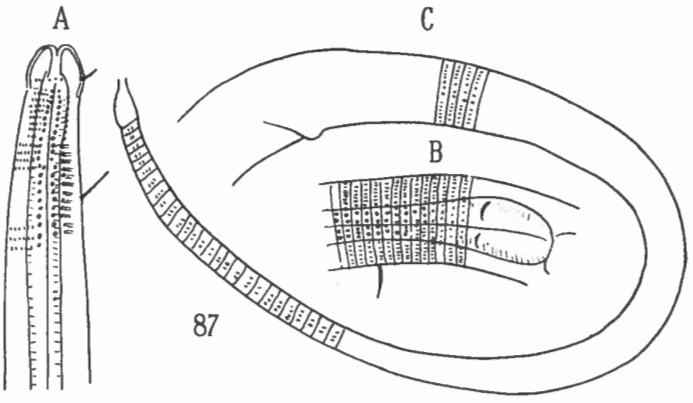

Fig. 87. — *Trichromadora ophiocephala* n. sp.
A : Female head end. B : Base of œsophagus.
C : Tail.

specimen is conspecific with *P. mediterranea*, I think it will be wise to separate it for the moment from that species and to treat it here as *Prochromadorella brachyura* n. sp.

86. — **Prochromadorella brachyura** n. sp.

(Fig. 86, A, B.)

1 ♂, from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

Length : ♂, 0,6 mm; $\alpha = 30$; $\beta = 5{,}58$; $\gamma = 11{,}5$.

Filipjev's formula :

$$\frac{0 \quad 108 \quad M \quad 548}{8 \quad 20 \quad 16 \quad 16} \quad 600\ \mu.$$

Head with distinct lips, crowned with minute setiform papillae. The cephalic setae, 4 in number, measure 33 % of the corresponding cephalic

diameter. Amphids slit-like, half as wide as the corresponding body diameter. Buccal cavity with distinct diadem and 3 equal rather blunt teeth, situated at the level of the cephalic setae.

Spicular curved, hardly swollen at their proximal end, the chord measuring 1,1 anal diameter. Gubernaculum, very faint. I have seen 4 equally spaced distinct praeanal papillae, of which the most posterior one is placed at a level with the proximal end of the spicula, whereas the most anterior one is separated from the anal cleft by a distance equal to 2,28 anal diameters. Tail gradually tapering to the spinneret. Length of the same 4 anal diameters.

Genus TRICHOMADORA KREIS, 1925.

87. — **Trichomadora ophiocephala** n. sp.

(Fig. 87, A-C.)

1 ♀, from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus. Depth 2 m.

Length of the female :

1,204 mm; $\alpha = 43,2$; $\beta = 9,16$; $\gamma = 4,86$; V. = 46,1 %.

FILIPJEV's formula :

$$\frac{0 \quad 132 \quad 556 \quad 956}{8 \quad 16 \quad 28 \quad 16} \quad 1204\ \mu.$$

Body slender. Width at the anterior end 28,5 % only of that at the vulva, whereas the body attenuates strongly from the posterior oesophageal end to in front so that its width at the anterior end is no more than half that of the posterior end of the oesophagus. Head end swollen, bluntly truncate anteriorly. No labial papillae observed. Cephalic setae short, measuring 45,5 % of the corresponding cephalic diameter. Amphids not seen. Cuticular ornamentation beginning immediately behind the cephalic swelling. Here the lateral fields are demarcated by three longitudinal rows of comparatively widely spaced cuticular dots; width of these lateral fields 33,3 % of the body diameter at the anterior end of the oesophagus. For the rest the rings bear a single transverse row of fine rodlike points. Pilosity at the anterior end of the oesophagus like elsewhere on the body, scarce, comparatively long. Length of these setae 50 % of the corresponding body diameter. Oral cavity narrow, no teeth observed. Oesophagus only slightly widened towards the posterior end, so that one can hardly speak of a bulb. Tail long, gradually tapering to the posterior end, which is slightly swollen again. Width at the base of the spinneret 21,8 % of the anal diameter. Tail length equal to 12,8 anal diameters.

The species is closely allied to *Trichomadora longicaudata* Kreis from Trébeurden but differs from the latter by the absence of a dorsal tooth and by differences in the pilosity of the head portion. Moreover the tail in *Tr. longicaudata* is comparatively longer (19 anal diameters) than in the present species, whereas the oesophagus in the present species is comparatively longer than there.

Family **COMESOMIDÆ.**

Genus DORYLAIMOPSIS Ditlevsen, 1919.

88. — **Dorylaimopsis punctatus** Ditlevsen, 1919.

(Fig. 88, A-I.)

2 ♂♂, 1 juv. from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

5 ♂♂, 9 ♀♀, 12 juv. from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

1 juv. from Villefranche, grey mud, entrance of the road. Depth 230 m.

Length : ♂ 1, 2,532 mm; $\alpha = 27{,}8$; $\beta = 7{,}3$; $\gamma = 13{,}9$.

Filipjev's formula :

$$\frac{0 \quad 24 \quad 144 \quad 304 \quad M \quad 2072}{16 \qquad\qquad 60 \quad 80 \quad 52} \quad 2532\ \mu.$$

♂ 2, 1,94 mm; $\alpha = 27$; $\beta = 6{,}9$; $\gamma = 12{,}18$.

Filipjev's formula :

$$\frac{0 \qquad 280 \quad M \quad 1680 \quad 1780}{16 \qquad 64 \quad 72 \qquad\quad 64} \quad 1940\ \mu.$$

♂ 3, 2,18 mm; $\alpha = 36{,}4$; $\beta = 6{,}42$; $\gamma = 12{,}1$.

Filipjev's formula :

$$\frac{0 \qquad 340 \quad M \quad 2000}{20 \qquad 60 \quad 60 \quad 50} \quad 2180\ \mu.$$

♀ 1, 2,332 mm; $\alpha = 28{,}4$; $\beta = 7$; $\gamma = 12{,}8$; V. = 45,5 %.

Filipjev's formula :

$$\frac{0 \qquad 320 \quad 1012 \quad 2052}{16 \qquad 72 \quad 76 \quad 48} \quad 2332\ \mu.$$

Juv. 1, 1,7 mm; $\alpha = 26{,}5$; $\beta = 5{,}3$; $\gamma = 9{,}45$.

Filipjev's formula :

$$\frac{0 \qquad 320 \quad 1420}{12 \qquad 64 \quad 56} \quad 1700\ \mu.$$

Ditlevsen's male length : 2,6 mm; $\alpha = 35$; $\beta = 6{,}7$; $\gamma = 12{,}3$.
Ditlevsen's female length : 2,9 mm; $\alpha = 29$; $\beta = 8{,}2$; $\gamma = 12{,}4$.

The rich material enabled me to make a thourough study of the present species, which belongs to a genus closely allied to *Sabatieria,* but easily distinguishable from the latter by the possession of 3 buccal teeth, lateral fields consisting of 4 rows of dots and a notched long spiculum.

Head distinctly off set from the body by a constriction. Six lips each with a conical papilla, 6 identical labial papillae and 4 cephalic setae, implanted near the lower end of the head portion. Length of these setae 47,5 % of the

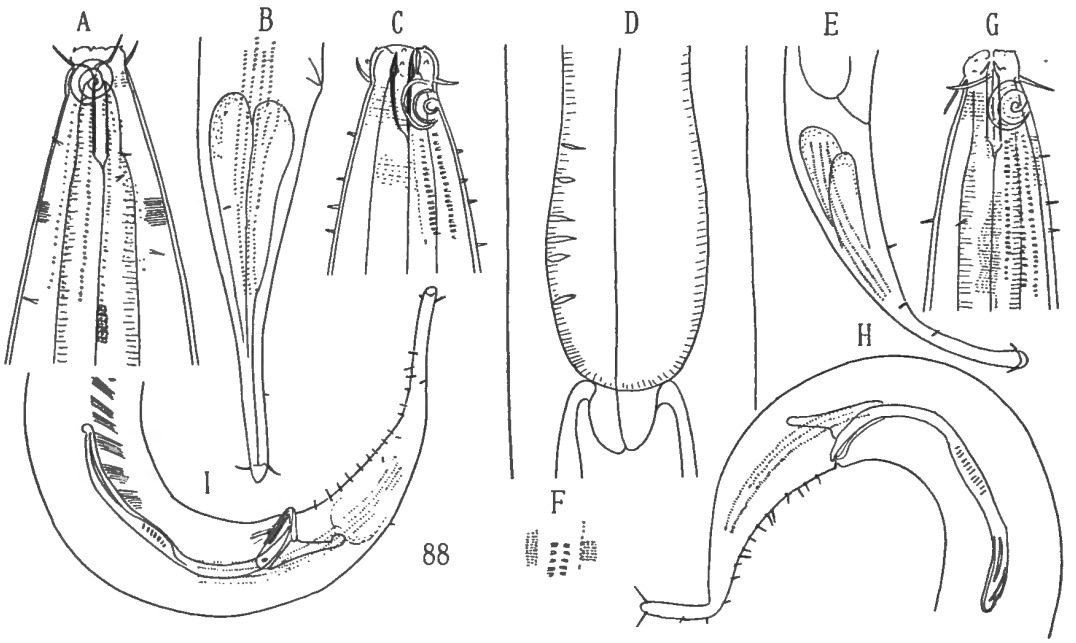

FIG. 88. — *Dorylaimopsis punctatus* DITLEVSEN.

A : Head end juvenile. B : Tail juvenile. C : Female head end.
A : Head end juvenile. B : Tail juvenile. C : Female head end. D : Female, base of œsophagus. E : Female tail. F : Cuticular or namentation on the male skin. G : Male head end. H, I : Male tail.

corresponding cephalic diameter in the female, 66,8 % of that same cephalic diameter in the male. Amphids spiral, consisting of 3 ½ windings. Width of the amphids 64 % of the corresponding diameter in both sexes. Oral cavity beginning with a narrow vestibulum, followed by the mesostomal cavity from which 3 teeth point forwards and followed by a cylindrical metastome. Oesophagus ending with a posterior bulbar swelling.

Cuticle with fine interior striation, exterior rows of points, interrupted at the lateral fields by 4 longitudinal rows of points, of which the interior ones are distinctly larger than the exterior ones and moreover mounted on scale-like platelets (fig. 88 B). Short setae are scattered over the oesophageal body portion, more or less distributed in longitudinal rows. Female tail broad at

base, gradually tapering towards a more or less cylindrical portion, which occupies 35 % of the whole tail length. Tip of tail slightly swollen. Some minute hairs are found on the tail, especially on the ventral and subventral sides and at the base of the spinneret. Length of female tail equal to 4 anal diameters.

Male in the possession of a strongly curved spiculum, pointed at its tip, widened at its distal half, where it is provided with transverse striae. Proximal end of the spicula hardly swollen; at its distal end, where there is also longitudinal ridge, the spiculum ends in a point. Spicular chord, 2,48 anal diameters long. Gubernaculum, 78,8 % of the anal diameter, provided with a dorsal apophysis. The distal portion of the gubernaculum embraces the tip of the spiculum. I did observe a praeanal row of 18-22 faint praeanal papillae. Male tail with a cylindrical apical portion, occupying 36,25 % of the total tail length. Along the ventral side of the tail one finds a row of distinct setae. Length of the tail 3,22 anal diameters.

Geographical distribution : Trondjhemfjord, Oresund, Sound, Mediterranean, Villefranche.

Genus PARACOMESOMA n. gen.

89. — **Paracomesoma coronata** n. sp.

(Fig. 89, A-F.)

1 juv. from Villefranche « Baie de Lilong », sand. Depth 3 m.

4 ♂♂, 3 ♀♀, 2 juv. from Villefranche, off the « Vieux Villefranche », black mud and organic detritus. Depth 20 m.

Length : ♂, 2,82 mm; $\alpha = 39$; $\beta = 10{,}1$; $\gamma = 12{,}8$.

Filipjev's formula :

$$\frac{0 \quad 160 \quad 280 \quad M \quad 2600}{16 \qquad 44 \quad 71 \quad 42} \quad 2820\ \mu.$$

Length juv. Lilong : 3,952 mm; $\alpha = 56{,}5$; $\beta = 10{,}6$; $\gamma = 11{,}5$.

Filipjev's formula :

$$\frac{0 \quad 220 \quad 372 \quad 3652}{70 \quad 40} \quad 3952\ \mu.$$

The species in question is closely allied to Filipjev's *Comesoma dubia*, the male of which measured : Length 2,8 mm; $\alpha = 49$; $\beta = 11{,}5$; $\gamma = 14$. Filipjev's species differs however from the present species in that the cervical setae are distinctly shorter than in our species. The spicula of Filipjev's species are in the possession of a very complicate gubernaculum, that is composed of at least two pieces, of which one is applicated to the spiculum. In the present species this question is not quite clear. In one of the specimens I have found a gubernaculum with dorsal apophysis, in the other it seems to

be applicated to the spiculum. Remains the question if we have to reckon *Comesoma dubia* to the genus *Comesoma* or not. It is distinguished from the other representants of the genus by its peculiar buccal dentition, for we find 3 distinct teeth in the mesostome. For that reason I think it advisable to bring *Comesoma dubia* FILIPJEV as well as the present species to a new genus which I propose to name *Paracomesoma.*

Head distinctly swollen, lips prominent, crowned with 6 conical papillae. Further we observe 6 cephalic setae, that are 43,5 % of the corresponding

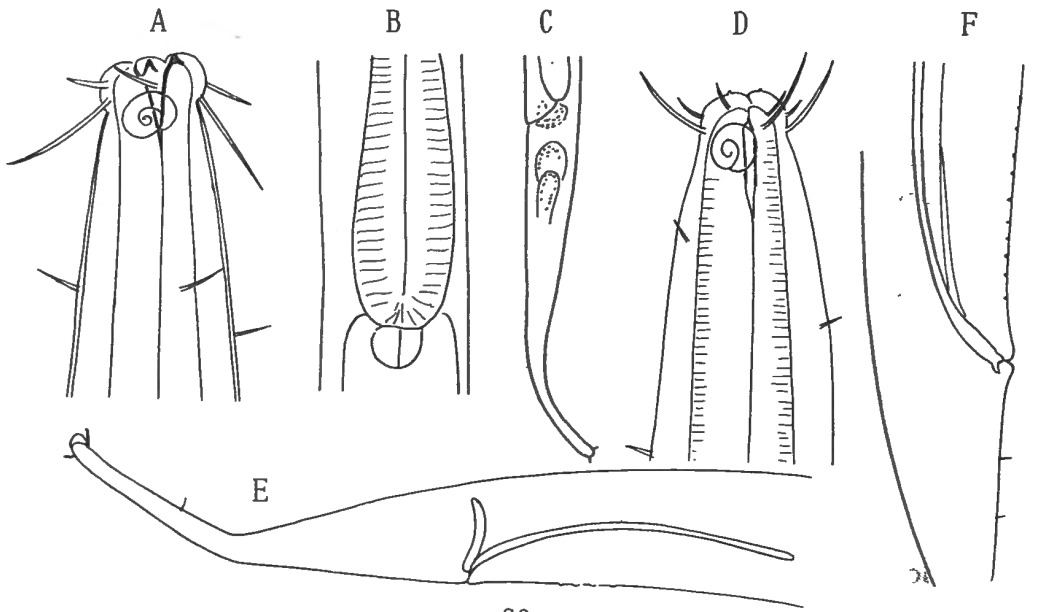

FIG. 89. — *Paracomesoma coronata* n. sp.
A : Female head end. B : Base of œsophagus. C : Female tail. D : Male head end. E : Male tail. F : Male genital armature.

diameter long in the male type specimen. Cervical setae in the same male as long as 1,13 times the corresponding cervical body diameter.

In the juvenile the corresponding data were 44,6 % and 113 %.

Amphids opposite to the lower head end, spiral, composed of 2 ½ windings, only half as broad as the corresponding body diameter. In the juvenile from Lilong the amphids measured 54 % of the corresponding body diameter. The oesophageal portion of the body bears a small number of setae, more or less arranged in longitudinal, submedian rows. Oral cavity, cylindroconical, with the mentioned three teeth. Oesophagus swollen towards the posterior end. Cardia distinct. Nerve ring at 59 % of the total length in the juvenile, at 57,5 % in the male. Genital armature consisting of long and slender spicula, 3,5 anal

diameters long. Gubernaculum with dorsal apophysis, 0,74 anal diameter long, boomerang-shaped. In one of the other males it was applicated against the spiculum and truncated at its tip. Male tail, 5,58 anal diameters long, cylindrical portion of the same 33,3 % of the total length. It is adorned with a few short setae. The juvenile tail measures 7,4 anal diameters, its cylindrical portion occupies 33 % of the whole tail.

Genus COMESOMA Bastian, 1865.

90. — **Comesoma punctata** n. sp.

(Fig. 90, A-C.)

2 ♀♀, from Villefranche, off the Station, coarse sand under vegetation of *Posidonia*. Depth 15 m.

Length : ♀, 2,616 mm; $\alpha = 41$; $\beta = 9$; $\gamma = 31{,}2$; V. = 51,5 %.

Filipjev's formula :

$$\frac{0 \quad 152 \quad 292 \quad 1352 \quad 2532}{16 \qquad 52 \quad 64 \quad 40} \quad 2616\ \mu.$$

With some hesitation I bring the species in question to the genus *Comesoma* because I have no male to my disposition, which should make the diagnose quite certain. But considering the shape of the buccal cavity with its strong cuticularization and its chitinous ring at the anterior end, the long cephalic setae it should be reckoned to the said genus. The only difference of importance is the fact, that here we apparently have 6 long cephalic setae instead of the usual 4 but apparently 2 of the submedian setae are doubled, since these setae are quite contiguous and not widely spaced, which should be the case if we had to do with 6 units, corresponding to 6 areas of the head. Further the species in question is characterized by the shortness of its tail.

Head distinctly set off from the remainder of the body, swollen. Lips distinct. Labial papillae minute. Cephalic papillae, 6 in number, setiform. The 6 cephalic setae are very long and measure 1,24 times the corresponding cephalic diameter. Amphids circular in outline, spiral in structure, with 2 ½ windings. Skin with transverse rows of points, especially large and distinct on the lateral fields, which measure 44,5 % of the body diameter. Body annulation prominent. On the anterior portion of the body one finds a small number of irregularly scattered stiff bristles. Buccal cavity conical with anterior chitinous rim. In the depth of the latter a minute tooth. Nerve ring at 52 % of the oesophageal length. Tail short with the same cuticular annulation, conical. Length of the same 2,075 anal diameters long. Along the tail one finds some short setae. The condition of the tail allows us to conclude, that its tip was broken off during the life of the animal and the wound repaired. This results likewise from a comparison with the normal female where the tail has an elongate conical shape, with long filiform portion (fig. 90 C).

Genus SABATIERIA De Rouville, 1903.

91. — **Sabatieria hilarula** Bastian, 1865.

(Fig. 91, A-F.)

2 ♂♂, 2 ♀♀, 1 juv. from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

7 ♂♂, 4 ♀♀, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

1 ♀, from Villefranche, entrance of the road of Villefranche, grey mud. Depth 230 m.

Length : ♂ 1, 1,44 mm; $\alpha = 32,7$; $\beta = 6,92$; $\gamma = 8,4$.

Filipjev's formula :

$$\frac{0 \quad 120 \quad 208 \quad M \quad 1268}{12 \qquad 40 \quad 44 \quad 36} \quad 1440\ \mu.$$

Length : ♂ 2, 1,612 mm; $\alpha = 36,5$; $\beta = 8,4$; $\gamma = 8,03$.

Filipjev's formula :

$$\frac{0 \quad 132 \quad 192 \quad M \quad 1412}{18 \qquad 36 \quad 44 \quad 36} \quad 1612\ \mu.$$

Length : ♀, 1,58 mm; $\alpha = 26,25$; $\beta = 7,18$; $\gamma = 9,9$; V. = 45,5 %.

Filipjev's formula :

$$\frac{0 \quad 220 \quad 720 \quad 1420}{16 \quad 44 \quad 60 \quad 36} \quad 1580\ \mu.$$

Length : juv., 1,38 mm; $\alpha = 34,5$; $\beta = 6,9$; $\gamma = 8,25$.

Filipjev's formula :

$$\frac{0 \quad 116 \quad 128 \quad 200 \quad M \quad 1212}{14 \qquad\qquad 36 \quad 40 \quad 32} \quad 1380\ \mu.$$

Sabatieria hilarula is known from Helgoland, Holland, Norway, Trebeurden; in the Mediterranean I found it in material from Mallorca.

Head rounded in front, slightly swollen, with 6 lips and as many labial papillae, 6 cephalic papillae and 4 rather long setae, that measure 75 % of the corresponding cephalic diameter. Amphids large composed of 3 ½ windings, their width 73 % of the corresponding body diameter. Immediately behind the amphids one finds 4 rows of 7, rather long setae each. Oesophagus swollen posteriorly. Nerve ring at 58-68,5 % of the oesophageal length. Opposite to what is known from the litterature I did observe in the male, 11-12 inconspicuous very minute praeanal papillae, of which the most anterior one is situated 2,75 anal diameters in front of the cloaca, and a single praeanal seta. Spicula curved, strong, with a longitudinal bar near the proximal end. Length of the

spicular chord 1,58 anal diameters. Gubernaculum with dorsal manubrium; the distal part of the gubernaculum helds the distal portion of the spicula in its grip. Tail slender with the apical half tubular. It bears a row of ventral setae. Tail length equal to 4,5 anal diameters.

In the female I found the same relations at the head end. Here the cephalic setae measured 64 % of the corresponding cephalic diameter, whereas the amphids, composed of 3 ½ windings were comparatively smaller, measuring not more than 56,5 % of the corresponding body diameter. There are the usual

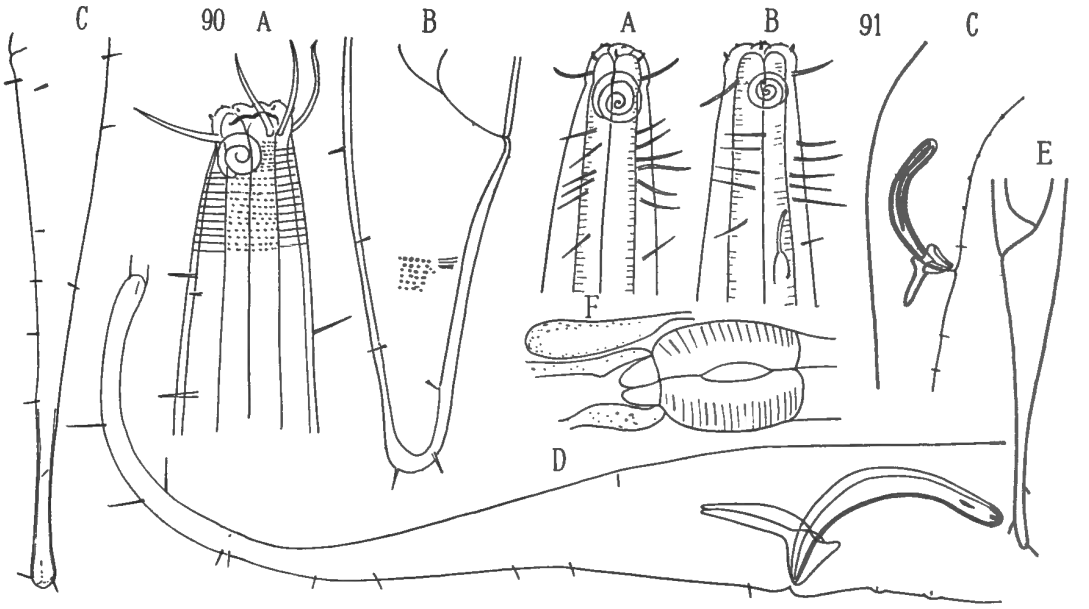

FIG. 90. — *Comesoma punctata* n. sp.
A : Female head end.
B : Female tail, wounded and repaired.
C : Female tail.

FIG. 91. — *Sabatieria hilarula* BASTIAN.
A : Male head end. B : Female head end.
C : Male genital armature. D : Male tail.
E : Female tail. F : Base of œsophagus.

rows of cervical setae, composed of 6 setae each. The excretory pore opens at a distance from the anterior end, 2,34 times as long as the widest cephalic diameter. Female tail of the same shape as the male tail, 5,2 anal diameters long, the tubular portion occupying 53 % of the whole tail length.

Although the dimensions of the present specimens are slightly smaller than those of more northern areas the structural differences are so slight, that it is quite certain that the specimen in question do belong to the said species. The only difference worth mentioning is the presence of praeanal papillae, which were not observed in former occasions, but the latter are so small and minute, that they easily may have escaped the attention of other nematologists.

92. — Sabatieria longicaudata Filipjev, 1922.

(Fig. 92, A, B.)

3 ♂♂, 1 ♀, 3 juv. from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus. Depth 3 m.

Length : ♂, 1,22; $\alpha = 38$; $\beta = 10,1$; $\gamma = 3,6$.

Filipjev's formula :

$$\frac{0 \quad 80 \quad 120 \quad M \quad 880}{16 \quad\quad 32 \quad 36 \quad 32} \quad 1220\ \mu.$$

Length of Filipjev's : ♂, 1,04 mm; $\alpha = 40$; $\beta = 7,5$; $\gamma = 4,5$.

Length of female in which the tail is partly broken :

1,34 mm; $\alpha = 41,8$; $\beta = 9,6$; $\gamma = 7,45$; V. = 43,25 %.

Filipjev's formula :

$$\frac{0 \quad 140 \quad 480 \quad 1160}{16 \quad 32 \quad 32 \quad 24} \quad 1340\ \mu.$$

Length of Filipjev's : ♀, 1,25 mm; $\alpha = 36$; $\beta = 8$; $\gamma = 6$.

In general structure the specimens found by me quite agree with those of Filipjev. I have therefore only depicted the male tail because it gives a more detailful picture of the male genital apparatus.

Spicula curved, proximal end rather broad, divided by a longitudinal rod into 2 cavities. Distal end of the spicula pointed. Length of the chord 1,245 anal diameters. Gubernaculum taking the distal end of the spicula in its grip with a strong dorsal apophysis. Proximal part of the tail conical, 29,5 % of the total tail length, which measures 10,2 anal diameters.

Geographical distribution : Krim, Kaukasus, Mediterranean, further Norway, Trondjhemsfjord, Oresund, Holland, Zuidersee, Trébeurden.

93. — Sabatieria abyssalis Filipjev, 1918.

(Fig. 93, A-D.)

4 ♂♂, 3 ♀♀, 5 juv. from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

2 ♀♀, from Villefranche, entrance of the road, grey mud. Depth 230 m.

Length : ♂, 1,8 mm; $\alpha = 41,8$; $\beta = 9,2$; $\gamma = 15,4$.

Filipjev's formula :

$$\frac{0 \quad 100 \quad 200 \quad 1720}{12 \quad\quad 40 \quad 44\ 32} \quad 1840\ \mu.$$

Length Filipjev's : ♂, 1,650 mm; $\alpha = 33$; $\beta = 7,5$; $\gamma = 10,5$.

Length : ♀ 1, 1,72 mm; $\alpha = 39$; $\beta = 9$; $\gamma = 10,25$; V. = 55,5 %.

FILIPJEV's formula : $\frac{0 \quad 108 \quad 192 \quad 952 \quad 1552}{16 \quad\quad 40 \quad 44 \quad 32}$ 1720 μ.

Length : ♀ 2, 1,432 mm; $\alpha = 35{,}8$; $\beta = 7{,}18$; $\gamma = 10{,}7$; V. = 50,1 %.

FILIPJEV's formula : $\frac{0 \quad 200 \quad 720 \quad 1300}{12 \quad 36 \quad 40 \quad 32}$ 1434 μ.

FILIPJEV's : ♀, 1,5 mm; $\alpha = 25$; $\beta = 6{,}5$; $\gamma = 9$; V. = 41 %.

Head end set off inconspicuously against the remainder of the body, as well in the male as in the female, not swollen. Labial and cephalic papillae

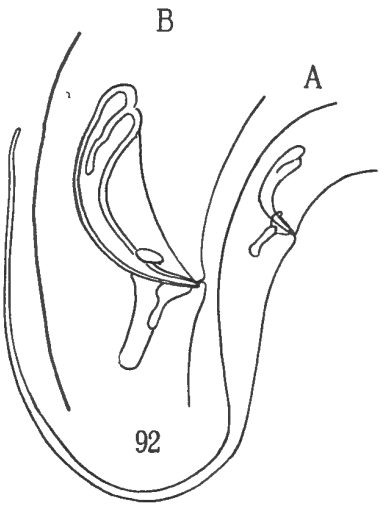

FIG. 92. — *Sabatieria longicaudata* FILIPJEV.
A : Male tail.
B : Male genital armature.

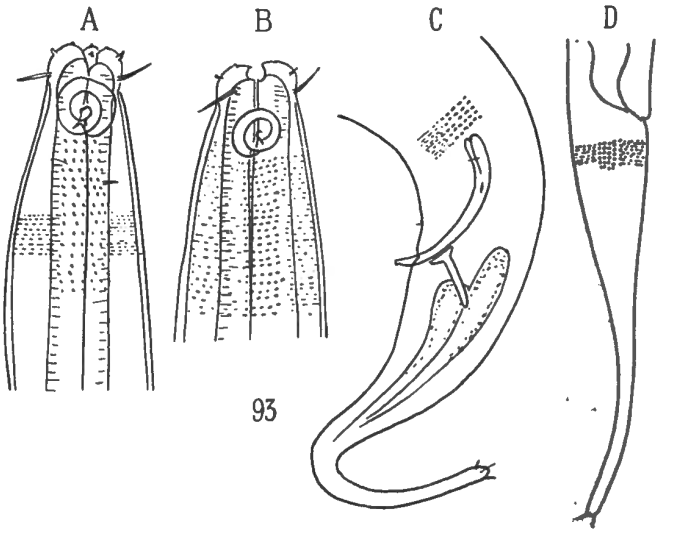

FIG. 93. — *Sabatieria abyssalis* FILIPJEV.
A : Male head. B : Female head.
C : Male tail. D : Female tail.

distinct, although not very prominent. Cephalic setae measuring in the male 53 % of the corresponding cephalic diameter. Amphids large, composed of 3 ½ windings, their diameter 70 % of the corresponding body diameter. Lateral fields distinctly demarcated by larger and more widely spaced dots, 31,3 % of the body diameter in the oesophageal region. Submedian portions finely striated. On the oesophageal region of the body some fine setae. Oral cavity undeep, oesophageal tooth present.

Genital armature : Spicula slender, slightly widened proximally, where one finds a median division of the spicular cylinder, followed more distally by a minute rod. Distal end pointed. Length of spicular chord 1,29 anal diameters. Gubernaculum with dorsal prolongation. No praeanal papillae observed. FILIPJEV (1918) saw 10 praeanal papillae, which he however did not depict, so that we may assume that they were inconspicuous.

Tail conical at base, apical portion occupying 52 % of the taillength filiform. Almost no setae on the tail except near the opening of the spinneret. Taillength equal to 3,75 anal diameters.

♀. Head much like that of the male. Length of cephalic setae 56 % of the corresponding diameter. Amphids composed of 2 ½ windings, but distinctly smaller than in the male, 50 % of the corresponding diameter. Lateral fields 28,5 % of the corresponding diameter in the oesophageal region, where we find like in the female some small setae. Nerve ring at 56,5 % of the total oesophageal length. Tail shaped as in the male, 4,9 anal diameters long, thus comparatively more slender than in the male sex, apical 47,5 % filiform. Some small setae are found on the tail.

GEOGRAPHICAL DISTRIBUTION : Black Sea, Mediterranean.

From *S. cleopatris* MICOLETZKY to which it is closely allied the species in question differs by its distinctly longer cylindrical portion of the tail. *S. abyssalis* FILIPJEV is closely related with *S. tenuicaudata* (BASTIAN) from which it may be distinguished by the smaller size and the comparatively greater length of the cephalic setae. MICOLETZKY (1924) says to have found *S. tenuicaudata* in the Mediterranean. He does however give no further data, with which this identification can be compared and tested on its correctness.

94. — **Sabatieria clavicauda** FILIPJEV, 1918.

(Fig. 94, A-G.)

5 ♂♂, 7 ♀♀, 10 juv. from Villefranche, farther end of « Port de la Darse », black mud and organic detritus. Depth 3 m.
16 ♂♂, 8 ♀♀, 11 juv. from Villefranche, off the « Vieux Villefranche », black mud and organic detritus. Depth 20 m.
1 ♂, from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.
1 ♀, offe the « Pointe de la Gavinette », grey mud. Depth 80 m.
2 ♀♀, from Villefranche, entrance of the road, grey mud. Depth 230 m.

Length : ♂ 1, 1,668 mm; $\alpha = 32,2$; $\beta = 8,9$; $\gamma = 13,9$.

FILIPJEV's formula :

$$\frac{0 \quad 120 \quad 188 \quad M \quad 1548}{12 \quad 36 \quad 40 \quad 52 \quad 44} \quad 1668\ \mu.$$

♂ 2, 1,388 mm; $\alpha = 38,6$; $\beta = 7,72$; $\gamma = 10,8$.

FILIPJEV's formula :

$$\frac{0 \quad 100 \quad 180 \quad M \quad 1260}{12 \quad 32 \quad 36 \quad 36} \quad 1388\ \mu.$$

♂ 3, 1,924 mm; $\alpha = 40$; $\beta = 9,62$; $\gamma = 16$.

FILIPJEV's formula :

$$\frac{0 \quad 120 \quad 128 \quad 200 \quad 240 \quad M \quad 1652 \quad 1804}{16 \quad 40 \quad 48 \quad 40} \quad 1924\ \mu.$$

♂ 4, 2,24 mm; $\alpha = 43$; $\beta = 9,32$; $\gamma = 15,9$.

FILIPJEV'S formula :

$$\frac{0 \qquad\qquad\qquad 240 \quad 1240 \quad 2100}{20 \qquad\qquad\qquad 48 \quad 52 \quad 40} \quad 2240\ \mu.$$

FILIPJEV'S : ♂, 1,27 mm; $\alpha = 33$; $\beta = 8$; $\gamma = 11$.
Length : ♀ 1, 2,44 mm; $\alpha = 48{,}6$; $\beta = 8{,}7$; $\gamma = 15{,}3$; V. = 47,5 %.

FILIPJEV'S formula :

$$\frac{0 \quad 280 \quad 1160 \quad 2280}{15 \quad 40 \quad 50 \quad 40} \quad 2440\ \mu.$$

Length : ♀ 2, 1,536 mm; $\alpha = 32$; $\beta = 8{,}35$; $\gamma = 10{,}6$; V. = 47,2 %.

FILIPJEV'S formula :

$$\frac{0 \quad 112 \quad 144 \quad 724 \quad 1392}{12 \qquad 40 \quad 48 \quad 32} \quad 1536\ \mu.$$

Length : ♀ 3, 1,392 mm; $\alpha = 34{,}8$; $\beta = 6{,}98$; $\gamma = 10{,}5$; V. = 53,2 %.

$$\frac{0 \quad 120 \quad 200 \quad 740 \quad 1260}{12 \qquad 36 \quad 40 \quad 24} \quad 1392\ \mu.$$

FILIPJEV'S : ♀, 1,62 mm; $\alpha = 30$; $\beta = 9$; $\gamma = 12$; V. = 49 %.
Length : juv., 1,832 mm; $\alpha = 45{,}8$; $\beta = 10{,}9$; $\gamma = 13{,}9$.

FILIPJEV'S formula :

$$\frac{0 \quad 168 \quad M \quad 1700}{10 \quad 36 \quad 40 \quad 28} \quad 1832\ \mu.$$

Head not distinctly set off against the remainder of the body, hardly swollen with minute labial papillae, a crown of 6 cephalic papillae and 4 cephalic setae, measuring in the male 42,2 % of the corresponding cephalic diameter. In the female the same setae measure about 50 % of the corresponding diameter. Amphids in the male circular, spiral, composed of 3 ½ windings, diameter 58 % of the corresponding body diameter. On the oesophageal portion some scattered setae. Cuticula finely striated by transverse striae, composed of minute dots. No peculiar differentiation on the sides like in *punctata*. Oral cavity distinct, more or less circular. Oesophageal tooth present.

Nerve ring at 55,5-64 % of the total oesophageal length. Excretory pore at 64 % of the oesophageal length. End of excretory cell 1,2 oesophageal lengths from the anterior body end. Genital armature, composed of curved spicula, the proximal end of which is distinctly headed, in the possession of a median ridge, connected with a rather long rod. Length of spicula 1,04 anal diameters. Gubernaculum with a broad grip, embracing the spicula and dorsal prolongations, 74 % of the anal diameter. 6-7 praeanal papillae (8 in FILIPJEV's male), the most apical ones closely adjacent, those next to the cloaca more widely spaced.

The most cephal one 3 anal diameters from the cloaca (5 anal diameters in FILIPJEV's male). Tail conical tapering to a short cylindrical portion, slightly swollen at the apex. Length of the tail 2,25 anal diameters, provided with some short setae.

Amphids in the female circular with 3 ½ circumvolutions, measuring 52,5 % of the corresponding diameter. Length of the female tail 4,68 anal diameters.

GEOGRAPHICAL DISTRIBUTION : Black Sea, Mediterranean.

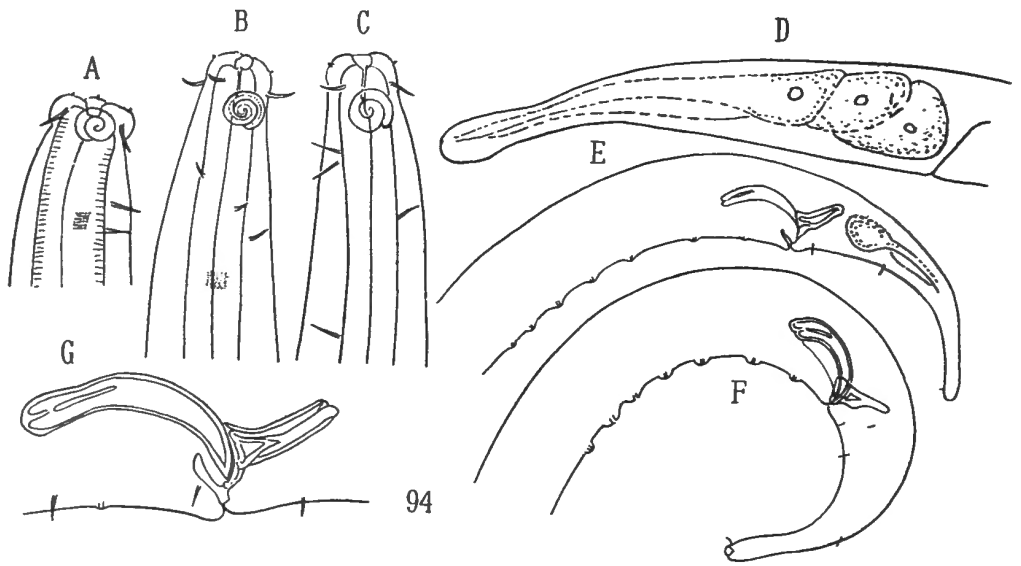

FIG. 94. — *Sabatieria clavicauda* FILIPJEV.
A : Female head. B : Female head. C : Male head. D : Female tail E F : Male tail ends.
G : Male genital armature.

From *S. quadripopullata* FILIPJEV to which it is closely allied it differs in the structure of the spicula and the number of praeanal papillae.

Notwithstandig the differences my specimens present with the type, I believe we may safely bring them to that species.

The specimens show at the same time great resemblance with *S. punctata* KREIS, especially those that have been depicted by ALLGÉN for the Öresund. The structure of the spicula however is more like that in FILIPJEV's type, for in *punctata* we find a longitudinal ridge throughout the whole length of the spicula. The possibility exists that future researches will prove that *S. punctata* and *clavicauda* are conspecific in which case the name *clavicauda* must be retained.

95. — **Sabatieria rugosa** n. sp.

(Fig. 95, A-C.)

1 ♂, from Villefranche, off the Station, coarse sand under vegetation of *Posidonia*. Depth 15 m.

Length : ♂, 2,464 mm; $\alpha = 43.8$; $\beta = 9{,}9$; $\gamma = 12$.

Filipjev's formula : $\frac{0 \quad 248 \quad M \quad 2248}{24 \quad 48 \quad 64 \quad 44}$ 2464 µ.

Kreis ♂ of *dodecaspapillata* which is closely related measured 2,432 mm; $\alpha = 28{,}5\text{-}35{,}9$; $\beta = 10{,}3\text{-}11{,}1$; $\gamma = 9{,}8\text{-}12{,}3$.

Head swollen, anteriorly truncated. Labial papillae 6 in number. Cephalic papillae minute. cephalic setae slender, 54,8 % of the corresponding cephalic diameter. Amphids composed of 2 ½ circumvolutions, 54 % of the corresponding body diameter. Cuticle at the lateral fields adorned with rather widely spaced comparatively large dots; punctation much finer on the submedian fields. On the anterior oesophageal portion one finds some scattered setae. Buccal cavity caliciform, shallow. There is a minute oesophageal tooth opposite to the amphids. Genital armature : Kreis (1929) found in this *dodecaspapillata* 12 praeanal papillae, whereas the present specimens possessed about 20 praeanal papillae, being small more or less tubular outlets of gland cells. Spicula gently curved, knobbed at the proximal end, possessing just there a median rod, extending almost halfways to the distal end of the same, which is less far than in Kreis *dodecaspapillata*. Distal end bluntly cut off. Chord of spicula 1,3 anal diameters long. Gubernaculum with a long dorsal apophysis. Tail 4,85 anal diameters long and slender, bearing rather numerous setae, further in the possession of a rather long filiform portion, which occupies 45,8 % of the total tail length.

The present species may be distinguished from *S. dodecaspapillata* by the lateral differentiation of the cuticular ornamentation by the longer cephalic setae, by the differences in structure of spicula and gubernaculum, as well as by the greater number of praeanal papillae.

The male in question shows far reaching resemblance with *S. tenuicaudata* from Alexandria. Confer for instance the shape of head and tail, the structure of the spicula, the number of praeanal papillae as well their structure, the ornamentation of the skin and its pilosity. As differences I ask attention for the distinctly larger buccal cavity in *S. tenuicaudata* (Bastian), for the longer cephalic papillae of that species, for the recurved cephalic portion of the gubernaculum in the last named species, for the longer longitudinal ridge of the spicula in *rugosa*.

Undoubledly *S. rugosa* and *S. tenuicaudata* are closely related.

96. — Sabatieria effilata n. sp.

(Fig. 96, A, B.)

1 ♂, from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

Length : ♂, 3,04 mm; $\alpha = 76$; $\beta = 12{,}7$; $\gamma = 15{,}2$.

FILIPJEV's formula :

$$\frac{0 \quad 240 \quad 2840}{20 \quad 40 \quad 40} \quad 3040\ \mu.$$

The species in question is closely allied to *S. abyssalis* FILIPJEV, as well as to the species treated above as *S. rugosa* SCHUURMANS STEKHOVEN. From the latter it may be distinguished by its more slender body and by the distinctly larger size of the amphids, from the first except by its larger size by differences in the structure of the spicula.

Head rounded, distinctly set off from the remainder of the body. Labial papillae not prominent, cephalic papillae minute and not so distinct as in *abyssalis*. Cephalic setae 4 in number, measuring 46 % of the corresponding cephalic diameter. Amphids large, transverse, with 3 ½ windings, their width 73 % of the corresponding diameter. Anterior oesophageal portion of the body with a small number of setae, like in *S. rugosa*. Lateral fields distinctly marked off by larger and more widely spaced dots, width of the lateral fields 38,3 % of the body diameter at the anterior portion of the body. Spicula slender, rather sharply cut off distally, not knobbed proximally, with a long rod for strengthening, running from the proximal end over 39 % of the whole spicular length. Length of the spicula, measured along the chord, 2,06 anal diameters. No praeanal papillae were observed, but a number of short setae instead. Gubernaculum embracing the spicula at their distal end with a broadened prolongation, whereas the proximal portion of the gutter in which the spicula glide is pointed. The gubernaculum possesses a distinct dorsal apophysis, which is rather slender and parallelsided, not swollen at its distal end. Tail conical at base, soon tapering to the rather long filiform end, which occupies about 53,5 % of the whole tail, which equals 4,56 anal diameters. Tail beset with a number of short setae, especially numerous along its subventral side.

Order ARÆOLAIMOIDEA

Family DIPLOPELTIDÆ.

Genus DIPLOPELTIS Cobb, 1905.

97. — **Diplopeltis cirrhatus** (Eberth, 1863).

Syn. *D. eberthi* Filipjev.

(Fig. 97, A, B.)

1 ♂, from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

Length : ♂, 2,628 mm; $\alpha = 34,5$; $\beta = 11,21$; $\gamma = 17,7$.

Filipjev's formula :

$$\frac{0 \quad 160 \quad 236 \quad 580 \quad M \quad 2480}{16 \qquad 56 \qquad 76 \quad 56} \quad 2628\ \mu.$$

Filipjev's ♀, 3,65 mm; $\alpha = 40$; $\beta = 17,5$; $\gamma = 48$.

Having of *D. eberthi* consulted the whole litterature on this point I am not quite sure that *Diplopeltis eberthi* Filipjev and *D. cirrhatus* (Eberth), with which *D. typicus* Cobb is synonymous, are not one and the same species. For the main difference between both species consists in the shape of the amphids, which according to Filipjev is discus-shaped in *cirrhatus* and more like a sheperd's crook in *eberthi*. Now I have to my disposition a figure made by Bresslau and published in my monograph on the freeliving marine Nematodes of the North Sea and Baltic which depicts the amphids of *D. cirrhatus* as a sheperd's crook, and if we look at Cobb's figure (9, 1891) of *D. typicus* we may be rather sure that here too the amphids had the same shape. The tail is slightly longer in *eberthi* than in *cirrhatus*, but this is nearly the only difference worth mentioning. So I am convinced that *D. cirrhatus* and *D. eberthi* are synonymous. Probably the growth type of this slender species is about the same as *Ascolaimus filiformis* for which I have shown in collaboration with De Coninck (1932) that several other species are conspecific with it. Difference in size may be explained by assuming that the smaller specimens were younger than the longer ones.

Body strongly attenuated anteriorly, more then 4 times narrower at the anterior end than in the middle of the body. Quite in front the body is bluntly pointed. Here one finds 4 submedian rows of long setae, running without interruption to about the spot where one finds the eye spots. More backwards only a small number of such setae is found. Each of the former rows consists of 10 hairs. Length of these setae in front of the shields on which the amphids are situated 1,14 times as long as the corresponding body diameter. Amphidial shield more or less reversed heart-shaped, its greatest width measuring 53 %

of the corresponding body diameter. The amphids themselves loop-shaped, this loop is open at the back side. The widest portion of the loop measures 36 % of the corresponding body diameter. At the level of the eye spots the oesophagus presents a dilatation of its lumen. No special buccal cavity. Anterior portion of the oesophagus with cuticular lining, which is rather strong.

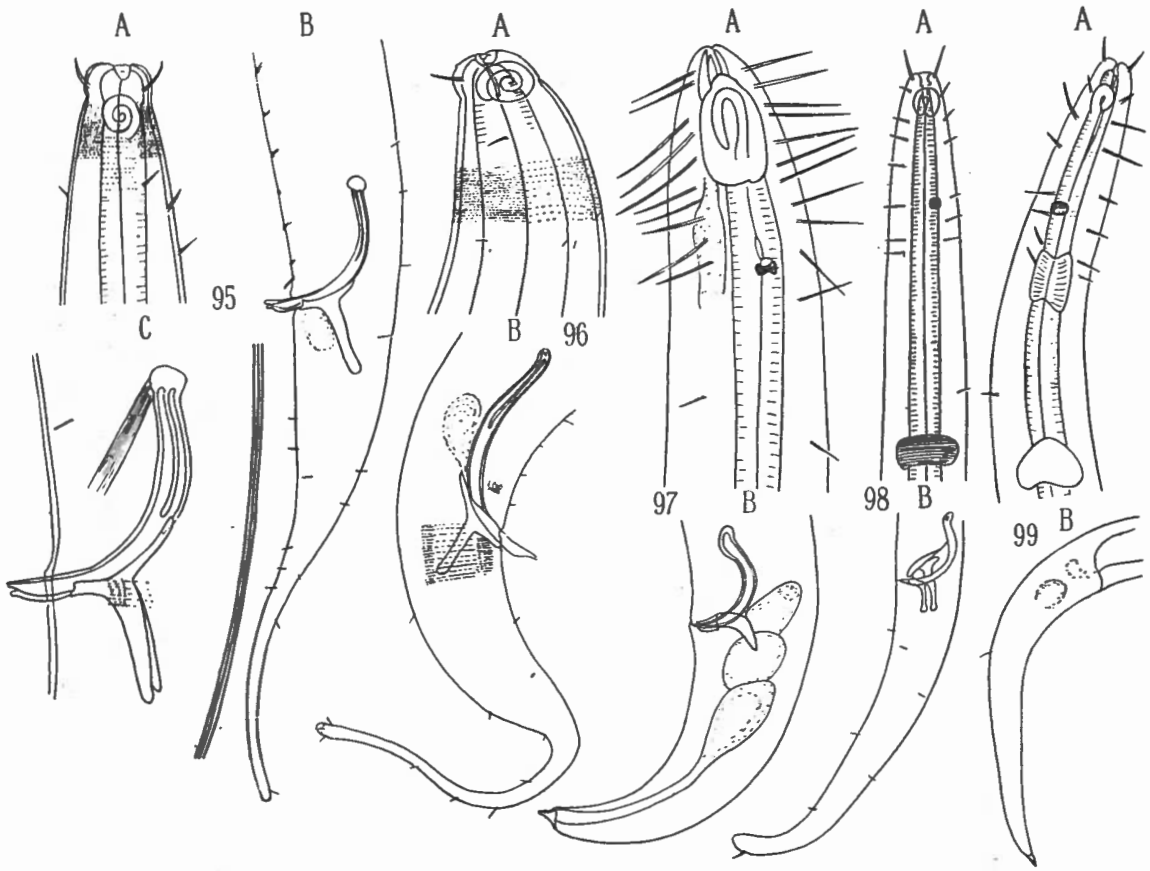

FIG. 95. — *Sabatieria rugosa* n. sp.
A : Male head. B : Male tail. C : Male genital armature.

FIG. 96. — *Sabatieria effilata* n. sp.
A : Male head. B : Male tail.

FIG. 97. — *Diplopeltis cirrhatus* (EBERTH).
A : Male head. B : Male tail.

FIG. 98. — *Araeolaimus bioculatus* (DE MAN).
A : Male head. B : Male tail.

FIG. 99. — *Araeolaimoides demani* n. sp.
A : Female head end. B : Female tail.

Excretory porus far forward opposite the amphids. Tail short, pointed at the end, elongate conical, 2,5 anal diameters long. Spicula strongly curved swollen proximally, its chord 78 % of the anal diameter. Gubernaculum embracing the spicula distally by means of a kind of manchette, that presents a caudal apophysis.

The tail contains 3 caudal glands, which run backwards till in front of the cloaca.

Geographical distribution : Black Sea, Mediterranean, Naples, Nizza, North Sea, Irish Sea, Bretagne, further Norwegian Coast, Vega, Gaasnes, Ingöy. Was recently observed by Allgén (1942) at Banyuls.

Family **AXONOLAIMIDÆ.**

Genera ARÆOLAIMUS and ARÆOLAIMOIDES (De Man).

The identification of the mediterranean *Arœolaimus* meets with great difficulties. One may even say that the problem cannot be solved with absolute certainty, because we do not dispose over enough detailed figures of the species formerly described. De Man has described two species of *Arœolaimus* called by him *Spira bioculata* De Man and *Spira mediterranea* De Man. Later on Micoletzky (1924) has given some details on what he calls *Arœolaimus bioculatus* var. *filiformis* and on a species, which he identifies as *Coinonema punctatum*. In 1935 Schuurmans Stekhoven has synonymized *Coinonema* with *Arœolaimoides*, so that we have henceforth to discern between *Arœolaimus* and *Arœolaimoides*.

Now unfortunately De Man's figures are not very exact I think, neither are they taken from the angle, that makes identification very easy. So for instance has De Man not given good figures of the lateral side of his specimens. If we take his plate IX, we find the picture of a female of his *Spira mediterranea* and next to it the picture of a head which eventually might have been the head of that same female. Underneath the figure 14 *c* depicts, what I suppose to be the male tail of that same species. If we compare figure 14 *a* (female head of *Sp. mediterranea*) with figure 14 *b*, a male head striking differences are observed. A direct comparison is difficult, because the first head has been depicted in lateral view, the second in dorsal resp. ventral view. The scale of both figures may likewise differ. We may however state with certainty, that the cervical setae of the female of figure 14 *a* were distinctly shorter and less obvious than those of the male of figure 14 *b*. It seems likewise that the amphids of the male were greater than those of the form depicted in figure 14 *a*. The cervical as well as the cephalic setae of *Spira bioculata* De Man (consult his fig. 13 *b* and *c*) are likewise smaller than the cervical and cephalic setae in the male head on figure 14 *b*. So I come to the supposition that 14 *b* and 14 *c* are taken from different species of animals and that 14 *b* should belong to the same animal of which the tail is depicted in figure 13 *d* on plate VIII. In that case we probably should have before us 3 species : 1. *Sp. bioculata* De Man, ♀ figure 13 *a-c*, ♂ figure 14 *c*; 2. *Spira mediterranea*, ♀ figure 14 *a*, ♂ figure 14 *c*, and the third species, of which the male has been depicted in figure 13 *d* and figure 14 *b*.

The following arguments have brought me to this supposition. In the material of Villefranche I found a female specimen, in which the cervical setae were peculiarly long, just as in DE MAN's figure 14 *b*, whereas the shape of the tail was quite in accordance with that of figure 13 *d* except that we had to do with a female instead of with a male. This tail rather suddenly attenuated; it was 5 anal diameters long in the male depicted by DE MAN, whereas my female had a tail, which was about 6 anal diameters long but had for the rest the same shape and curvature as the DE MAN's male. The head is quite alike that of figure 14 *a*. The amphids of my specimen are oval, an open loop and not circular like in *bioculata*. This would therefore be a representant of DE MAN's third species which I might call *Arœolaimoides demani*. I am supported in this conviction because I have found in Naples a male, which is in the possession of amphids that are almost circular in outline, although their structure is spiral. The cervical setae of that species are less long and hardly prolong over the sides of the body, which would be in accordance with DE MAN's data on *Sp. bioculata*. The tail being 5 anal diameters long gradually tapers to the narrower tip, more as in figure 14 *c*, than as in figure 13 *d*. The vulva is situated in *Sp. bioculata* DE MAN behind the middle of the body, that in *Sp. mediterranea* is found in front of the middle. A female from Alexandria was in the possession of amphids that although being spiral in structure are in reality loop-shaped. Its cervical setae were comparatively long, but shorter than in the specimen from Villefranche, the tail was more elongate, of the same type as in *bioculata*, whereas the vulva was situated behind the middle of the body, which fits with *bioculata*. The relative length of the tail fitted well with *bioculata*. The tail of the male from Naples is however shorter and was 5 anal diameters long, whereas the male tail of DE MAN's figure 14 *c*, which eventually might be the male of *Sp. bioculata* is only 4 anal diameters long. The gubernacula depicted by DE MAN for both males were apparently misinterpreted. They are in reality of the common type, frequently encountered in the family of *Axonolaimidæ*. From *Arœolaimus bioculatus* var. *filiformis* we possess insufficient data. We neither do know how the cervical setae were distributed nor do we possess exact figures of the tail in toto, so that a thorough comparison is impossible. The anterior position of the vulva should indicate that the form belongs to the relationship of *Sp. mediterranea*.

It is however questionable whether MICOLETZKY has figured the whole gubernaculum or if he has depicted the distal portion of it only.

Coinonema punctatum COBB, which probably is not conspecific with COBB's *Arœolaimoides punctatum* from the Pacific Coast of North America, is probably conspecific with *Spira mediterranea*, but we cannot be quite certain about that, so that it will be wise to let this species out of question till we know more of it.

Resuming we may say that we know from the Mediterranean the following forms. *Arœolaimus bioculatus* DE MAN, female sex and male sex.

Arœolaimus mediterraneus, figure 14 *a* De Man, with which *Coinonema punctatum* Micoletzky nec Cobb might be conspecific. It is possible that the male tail depicted by De Man in his figure 14 *c* belongs to a male of that species, but we are not absolutely sure on that point.

The third form *Arœolaimoides demani* is depicted in De Man's figures 13 *a* and 14 *b*. That we have here to do with a species of *Arœolaimoides* and not with *Arœolaimus* can be derived from the more elongate shape of the amphids and the inconspicuous oral cavity. About the position of the excretory pore of the species nothing is known.

In 1936 De Coninck described *Metarœolaimoides oxystoma* n. g. n. sp. from Sardinia, Bay of Capella.

Apart from that species I will give here too a description of *Arœolaimus bioculatus* De Man taken after material from Naples.

Genus ARÆOLAIMUS De Man, 1888.

98. — **Arœolaimus bioculatus** (De Man, 1888).

(Fig. 98, A, B.)

1 ♂, from Naples, collected by me in 1932.

Length : 0,804 mm; $\alpha = 36{,}5$; $\beta = 7$; $\gamma = 8$.

$$\frac{0 \quad 28 \quad 72 \quad 116 \quad M \quad 704}{5 \qquad 18 \quad 28 \quad 22 \quad 18} \; 804\ \mu.$$

Head end rounded anteriorly. Four long cephalic setae, each 1,1 cephalic diameter long. Follows on the 4 submedian sectors of the oesophageal region a row of 6-7 setae of moderate length, of which the most anterior ones are slightly shorter than the following ones. Each of the setae projects a little over the side of the body. The rows of submedian setae are continued till shortly behind the ocular spots, over a distance that equals 4 times the distance head end to back side of the amphids. Amphids circular in outline, spiral in structure, their diameter measuring 57 % of the corresponding body diameter. Ocular spots at 24 % of the oesophageal length. Nerve ring at 62 % of the oesophageal length. Buccal cavity cylindroconical, ending just opposite the centre of the amphids. Genital armature consisting in strongly curved spicula, with a swollen head end, that distinctly shows a short median ridge. Spicular chords, 80 % of the anal diameter. Gubernaculum with a cap projecting over the cephalic side of the spicula and two dorsal apophyses. Tail gradually tapering towards the rather filiform tip, ending with a conical spinneret. Along the tail some short setae, arranged more or less in longitudinal rows. Tail length equal to 5 anal diameters.

Geographical distribution : Mediterranean, Naples.

Genus ARÆOLAIMOIDES De Man, 1893.

99. — **Araeolaimoides demani** n. sp.

Syn. *Araeolaimus bioculatus* pr. parte.
Araeolaimus mediterraneus pr. parte.

(Fig. 99, A, B.)

1 ♀, from Villefranche « Baie de Lilong », sand. Depth 5 m.

Length : ♀, 1,32 mm; $\alpha = 33$; $\beta = 8{,}3$; $\gamma = 11$.

Filipjev's formula : $\frac{0 \quad 36 \quad 160 \qquad 1200}{10 \qquad 32 \quad 40 \quad 24}$ 1320 µ.

Head end bluntly rounded with 4 cephalic setae, being no longer than the cephalic diameter. These setae stay at the beginning of 4 submedian longitudinal rows, each composed of 8 setae of variable length, the third and fourth seta of each row distinctly longer than the second, which is situated at a level with the foreborder of the amphids and the fifth and following ones that run backwards till the end of the praeneural bulb. The second seta of each row is the smallest and does not surpass 43 % of the corresponding body diameter. The eyespots are found on a distance from the anterior end equal to 3 times the distance anterior end to backside of the amphids.

The eyespots are found at 40 % of the distance head end-nerve ring, shortly in front of the praeneural bulb. Tail elongate conical, almost 6 anal diameters long. The tail rather suddenly attenuates and ends with a rather sharp point, that is crowned with a spinneret. The tail has the same shape as the male depicted in De Man's figure 13 *d*. Whether *Coinonema punctatum* Micoletzky is identical with the present form cannot be proved any more now.

Geographical distribution : Naples, Villefranche, Mediterranean.

Araeolaimus tenuicaudatus Allgén from the Öresund is closely related with the present species.

Genus AXONOLAIMUS De Man, 1889.

100. — **Axonolaimus arcuatus** n. sp.

(Fig. 100, A-E.)

1 ♂, 1 ♀, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

This species is closely related to *Axonolaimus spinosus* Buetschli and to *Axonolaimus setosus* Filipjev nec Buetschli from the Black Sea but readily distinguishable from both by the shorter cephalic setae, by differences in the cervical pilosity as well as in the shape and size of the tail, by differences in the structure of the genital armature, whereas the amphids are distinctly more open at the anterior end than in both the aforementioned species.

Length : ♂, 1,5 mm; $\alpha = 34$; $\beta = 6,48$; $\gamma = 8\ 95$.

FILIPJEV's formula :

$$\frac{0 \quad 152 \quad 232 \qquad 1332}{12 \quad 32 \quad 36 \quad 44 \quad 36} \quad 1500\ \mu.$$

Length : ♀, 1,648 mm; $\alpha = 27,4$; $\beta = 7,1$; $\gamma = 9,4$; V. = 51,5 %.

FILIPJEV's formula :

$$\frac{0 \quad 24 \quad 140 \quad 232 \quad 852 \quad 1472}{12 \qquad\qquad 40 \quad 50 \quad 36} \quad 1648\ \mu.$$

♂. Head truncated anteriorly, slightly swollen along the sides. Lips each with two minute labial papillae. Cephalic setae 4 in number, comparatively short, measuring nor more than 50 % of the corresponding body diameter. Vestibulum with strongly cuticularised walls, presenting distinct longitudinal ridges, belonging to the mechanism of disclosure. Metastome conical, separated from the former by a fine circular cuticular fold. Amphids sausage-shaped, narrowly open anteriorly, closed posteriorly, quite covering the oral pit. There are 2 short setae at the right side, one of which just opposite to the posterior end of the amphids, the other about twice the length of the buccal cavity from the anterior border of the body, at the left side just posteriorly to the amphids I found two setae only separated by a narrow space. Nerve ring at 65,5 % of the total oesophageal length. Excretory pore not seen in the male. In front of the cloaca I observed a series of midventral glands. Spicula strongly arcuate, velate, chord of the same 1,15 anal diameters long. Proximal end of the spicula slightly dilated and elongated complicate in structure with two chitinous rods, one at the dorsal, the other at the ventral side of the same. Gubernaculum with dorsal apophyses, 75 % of the anal diameter, swollen at their proximal end.

There are subventral rows of praeanal and postanal setae. Tail elongate conical with three unequal caudal glands. Length of tail 4,5 anal diameters. The last 21 % of the tail is nipple-shaped, slightly swollen at its tip. Female in many respects identical with the male. Cephalic setae 41 % of the corresponding body diameter. Instead of two closely adjacent setae we find here 3 equally spaced setae at the same side. Oral cavity 10 % of the whole oesophageal cylinder. Excretory pore at 2,2 oral cavities from the anterior end. Opposite to the opening of the excretory pore the lumen of the oesophagus presents a slight widening and an interruption of the cuticular covering like is found in the genus *Arœolaimus*. Nerve ring at 60 % of the oesophageal length. Female tail 4,75 anal diameters long, containing three caudal glands in tandem position.

101. — **Axonolaimus ponticus** Filipjev 1918.

(Fig. 101, A, B.)

1 juv. from Villefranche, between the « Lazareth » and « Anse passable ». Depth 50 m.

The present specimen so strongly resembles *A. ponticus* Filipjev in general shape as well as in some particulars of its structure, that I am inclined to bring it to this species, although it is much smaller than the type specimens, which may however be due to age, since in the present case we have apparently to do with a juvenile specimen.

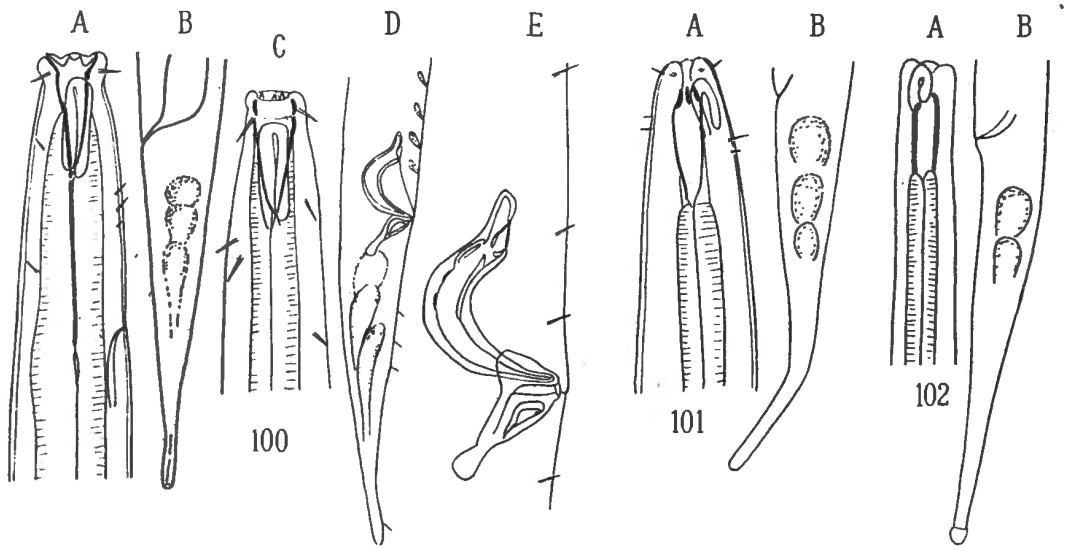

Fig. 100. — *Axonolaimus arcuatus* n. sp.
A : Female head end B : Female tail. C : Male head. D : Male tail.
E : Male genital armature.

Fig. 101. — *Axonolaimus ponticus* Filipjev.
A : Female head end. B : Female tail.

Fig. 102. — *Axonolaimus* spec.
A : Female head end. B : Female tail.

Length : juv., 1,284 mm; $\alpha = 35{,}6$; $\beta = 6{,}7$; $\gamma = 9{,}7$.

Filipjev's formula :

$$\frac{0 \quad 192 \qquad\qquad 1152}{16 \quad 36 \quad 36 \quad 20} \quad 1284\ \mu.$$

Head rounded anteriorly with on the lips minute papillae; I counted 4 cephalic setae, shorter than in the type specimen, but nevertheless 35 % of the corresponding cephalic diameter. Anterior head portion apparently intruded. For that reason we find the cuticular rods, resembling the teeth in the genus *Odontophora* more backwards than normal. They serve to strengthen the anterior conical portion of the buccal cavity, which is somewhat intruded in

the present specimen, are not so strong as in *Odontophora* but are apparently of the same strength as in *Axonolaimus*. Amphids loop-shaped, their maximal width being 42 % of the corresponding body diameter. Just as in the specimen depicted by Filipjev one finds, opposite to the lower end of the amphids two pairs of submedian groups of 2 short hairs each. Tail conical, gradually tapering to a cylindrical portion, which measures 33 % of the total tail length. Length of tail 5,08 anal diameters. Width at apex 20 % of the anal diameter.

Geographical distribution : Black Sea, Krim, Kaukasus, Sebastopol, Mediterranean, Villefranche.

102. — **Axonolaimus** spec.

(Fig. 102, A, B.)

1 ♀, from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

The specimen in question is in very bad condition of preservation, so that it cannot be identified with certainty. So for instance the cephalic setae are missing. The amphids situated near the anterior border of the head end apparently shifted to that position by the intrusion of the anterior head end, are elongate oval, their maximal width 40 % of the corresponding body diameter. Cephalic setae lost. Buccal cavity of the normal type. Tail elongate conical at base, then cylindrical, the latter. This portion occupying almost half the tail length. Tail length equal to 6,3 anal diameters, width at tip of tail 20 % of the anal diameter.

Dimensions :

Length : 1,7 mm; $\alpha = 56{,}6$; $\beta = 2{,}8$; $\gamma = 12{,}1$; V. = 62,3 %.

$$\frac{0 \quad 600 \quad 1060 \quad 1560}{13 \qquad 30 \quad 20} \quad 1700\ \mu.$$

Genus ODONTOPHORA Buetschli, 1874.

The material from Villefranche comprises 3 species, which I have reckoned to that genus. The first *Odontophora quadristicha* shows rather great resemblance with *Pseudolella cephalata* Cobb. It is however not in the possession of the cuticular wings, characteristical for that species. It does not show the distinct cuticular rings, that species presents. There is no more or less distinctly demarcated head portion. The buccal cavity is less deep than in *Pseudolella*. At the other hand our species has the peculiarly long amphids as well as the 4 groups of submedian subcephalic setae, each composed of 3 setulae and the buccal teeth, which are the prolongations of the longitudinal

riblike cuticularisations of the buccal cavity with *Pseudolella* in common. The cephalic setae are much longer than in *Pseudolella cephalata*. The amphids of the genus *Pseudolella* have however a much longer proximal leg, than in the present species which I prefer to keep in the genus *Odontophora*.

103. — **Odontophora quadristicha** n. sp.

(Fig. 103, A, B.)

The present species is characterized by the bluntly conical head, crowned with 4 comparatively long cephalic setae, by loop-shaped amphids with their legs largely divergent in length and by the presence of 4 groups of 3-4 minute setae each, opposite to the lower end of the shorter leg of the amphidial loop.

1 ♀, from Villefranche, off the « Vieux Villefranche », black mud and organic detritus. Depth 20 m.

Length : ♀, 1,42 mm; $\alpha = 28$; $\beta = 7{,}3$; $\gamma = 8{,}1$; V. = 52 %.

FILIPJEV's formula :

0	40	120	200	312	760	1280	
	12			44	52	48	1420 µ.

Head bluntly conical. Cephalic setae fine, 72 % of the corresponding cephalic diameter. The 4 groups of small setae are already mentioned above. Buccal cavity with 6 teeth in the vestibulum, the latter accompanied by minute rodlike structures. Length of vestibulum only 20 % of the whole length of the buccal cavity, the caudal 4/5 of which has parallel-sided walls. Amphids loop-shaped, the legs of the loop unequal in length, the longer one almost reaching to the end of the buccal cavity which itself measures 40 µ equal to 20 % of the whole oesophageal length. Their maximal width equals 50 % of the corresponding body diameter. Nerve ring at 60 % of the whole oesophageal length. End of excretory cell at 1,56 % of the oesophageal length from the anterior end. Vulva almost in the middle of the body. Tail conical in its basal half, then filiform, barely swollen at its tip, 4,1 anal diameters long. Width at apex 7 % of anal diameter.

104. — **Odontophora breviseta** n. sp.

(Fig. 104, A, B.)

1 ♀, from Villefranche, between the « Lazareth » and « Anse passable », Depth 50 m.

Length : 1,642 mm; $\alpha = 40{,}7$; $\beta = 8{,}66$; $\gamma = 9$; L. = 46,8 %.

FILIPJEV's formula :

0	28	144	188	768	1440	
12			40	40	28	1642 µ.

The species is closely allied to *O. quadristicha* but is in the possession of distinctly shorter cephalic setae, whereas the filiform portion of the tail is markedly longer than in the first named specie.

Head swollen anteriorly with the buccal teeth extruded. Cephalic setae 25 % of the corresponding cephalic diameter. Amphids loop-shaped, one of the legs, just as in *quadristicha*, although distinctly shorter than in that species. Moreover the legs of the loop seem to be thinner than in *quadristicha*. Maximal width of the amphids 33 % of the corresponding body diameter. Opposite to the lower end of the shorter leg of the amphidial loop,

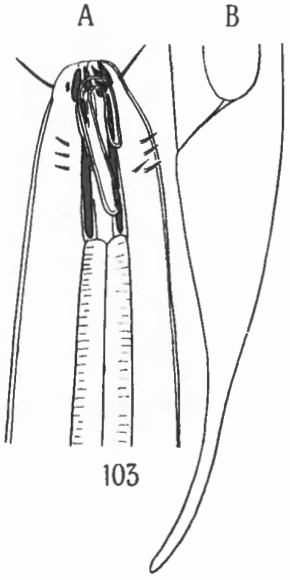

FIG. 103. — *Odontophora quadristicha* n. sp.
A : Female head. B : Female tail.

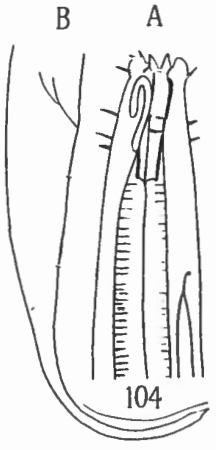

FIG. 104. — *Odontophora breviseta* n. sp.
A : Female head. B : Female tail.

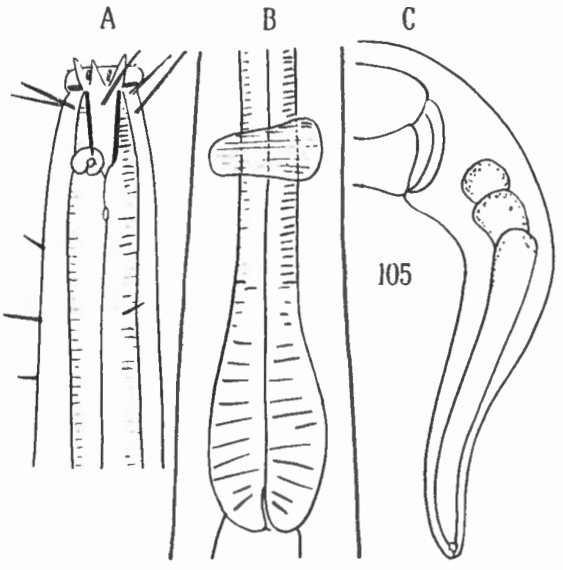

FIG. 105. — *Odontophora angustilatma* (FILIPJEV).
A : Female head. B : Base of œsophagus. C : Female tail.

4 submedian groups of short setae are observed, each composed of 2 or 3 setae, in the latter case of unequal length. Excretory pore on 1,75 buccal lengths from the anterior end. Nerve ring at 76 % of the total oesophageal length. Oesophagus enlarged posteriorly to a faint, elongate bulb-like swelling. Tail elongate conical, with its posterior 60 % effilated and pointed at its extreme apex. Length of tail 6,7 anal diameters. On the tail some short scattered setae. Width of the tail at its apex 10 % of the anal diameter.

105. — **Odontophora angustilaima** (FILIPJEV, 1918).

(Fig. 105, A-C.)

This species discovered by FILIPJEV in the Black Sea was rediscovered by me in the material from Villefranche.

1 ♀, from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

Length : ♀, 1,732 mm; $\alpha = 43{,}3$; $\beta = 12{,}3$; $\gamma = 24$; V. = 54,2 %.

FILIPJEV's formula :

$$\frac{0 \quad 140 \quad 940 \quad 1660}{12 \quad 42 \quad 40 \quad 28} \quad 1732\ \mu.$$

Head straight in front, with minute labial papillae. Vestibular teeth protracted and projecting in the present case through the oral opening. Cuticular bars, supporting the buccal cavity, horizontal in position. Like in FILIPJEV's specimen I find two crowns of cephalic setae, the anterior one apparently consisting of 4, the posterior one of 6 rather long setae, equal to the corresponding body diameter. Oral pit conical. The circular amphids, spiral in structure, are situated at the lower end of the buccal cavity and measure 35 % of the corresponding body diameter. I did not find the third crown of shorter cephalic setae FILIPJEV did depict in his figure 72 neither the short setae at the lower end of the buccal cavity. In my specimen some setae were, irregularly scattered along the submedian fields further downwards. Ovaries double. Tail rather short, bluntly conical, with three caudal glands in tandem position. Length of tail equal to 3,4 anal diameters. Width at tail end 20 % of anal diameter. Although we find some differences with FILIPJEV's specimen I dont think these are of specific rank, the more not since most of the features agree quite well his description whereas the differences may be partly due to variation and to the fact that the vestibular teeth were protracted in my specimen, but retracted in that of FILIPJEV, which likewise causes a shifting of the amphids, which for that reason had a more forward position in FILIPJEV's specimen, compared with mine.

In the shape of its amphids, *O. angustilaima* reminds the condition found in *Ascolaimus*.

FAMILY HALAPHANOLAIMIDÆ.

Genus SOUTHERNIA ALLGÉN, 1929.

106. — **Southernia elongata** n. sp.

(Fig. 106, A-C.)

1 juv. from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

The present species is easily distinguishable from those known in literature by the long slender effilate tail. Head truncate with indistinct lips and 4 cephalic setae, quite near to the anterior end, being of the same length as the corresponding cephalic diameter. Oral cavity long, cylindrical and very narrow, hardly more than a longitudinal slit, suddenly broadening posterior to the amphids to an oesophageal cylinder. Posterior oesophageal portion widening again to a somewhat elongate bulbous portion.

Amphids demarcated posteriorly by a straight line, connected with the anterior conical portion by means of a first broad, then narrow ring. Width of the amphids at their widest portion 56 % of the corresponding body diameter. At a level with the anterior end of the amphids one finds some short spines. Similar spines are observed more backwards. The cephalic portion of the body reminds that of the genus *Siphonolaimus* and as to me the exact position of the genus always remains somewhat uncertain. Nervering at 40 % of the total oesophageal length. Tail elongate tapering, with a long spinneret. Length of tail equal to 4,5 anal diameters.

Dimensions :

Length : 3,024 mm; $\alpha = 64{,}3$; $\beta = 11$; $\gamma = 14{,}2$.

FILIPJEV's formula :

$$\frac{0 \quad 108 \quad 272 \quad 2812}{\qquad\qquad\quad 47} \quad 3024\ \mu.$$

The species resembles closely *Southernia zosteræ* ALLGÉN but may be distinguished from that species by the greater slenderness of the tail, the shape of the amphids and the pilosity of the anterior body end.

Family **TRIPYLOIDIDÆ.**

Genus RHABDOCOMA Cobb, 1920.

107. — **Rhabdocoma brevicauda** n. sp.

(Fig. 107, A, B.)

1 ♂, 1 ♀ from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

1 ♂, from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

Dimensions :

Length : ♂ 1, 2,44 mm; $\alpha = 122$; $\beta = 20{,}5$; $\gamma = 40{,}7$.

$$\frac{0 \quad 80 \quad 120 \quad M \quad 2380}{8 \quad 16 \quad\quad 20 \quad 20} \quad 2440\ \mu.$$

♂ 2, 2,571 mm; $\alpha = 90$; $\beta = ?$; $\gamma = 45$.

$$\frac{0 \quad\quad\quad\quad M \quad 2120}{8 \quad 16 \quad 28 \quad 24 \quad 16} \quad 2178\ \mu.$$

♀, 2,72 mm; $\alpha = 97$; $\beta = 22{,}75$; $\gamma = 68$; V. = 56 %.

$$\frac{0 \quad 72 \quad 120 \quad 1120 \quad 2680}{6 \quad\quad 20 \quad 28 \quad 16} \quad 2720\ \mu.$$

Head end conical, rounded, with a minute oral opening and a crown of 6 very short setae, 16,6 % of the corresponding diameter. Somewhat more caudad I find a single seta, apparently belonging to a pair. Amphids circular, cryptospiral with a distinct median dot. Diameter of amphids 50 % of the corresponding body diameter. Buccal cavity very small, almost wanting. Oesophagus cylindrical, its posterior swelling indicated. Spicula rather coarse, blunt at proximal end. Length of spicula equal to 1,12 anal diameters. Gubernaculum rather small with a short dorsal apophysis. Tail short conical, 2,67 anal diameters long.

End of tail with a spinneret.

The systematic position of the representants of this genus is somewhat uncertain. Filipjev (1925) reckons the genus to the *Tripyloididæ* and so I have done, although I am not convinced that this position is quite correct. We have to await a larger material to solve this difficult question.

108. — **Rhabdocoma cylindricauda** n. sp.

(Fig. 108, A, B.)

4 ♀ ♀, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

Dimensions :

Length : ♀ 1, 3,16 mm; $\alpha = 113$; $\beta = 19{,}8$; $\gamma = 158$; V. = 55,8 %.

$$\frac{0 \quad 88 \quad 160 \quad 1760 \quad 3140}{8 \qquad 20 \quad 28} \quad 3160\ \mu.$$

♀ 2, 2,596 mm; $\alpha = 93$; $\beta = 21{,}6$; $\gamma = 162$; V. = 55,5 %.

$$\frac{0 \qquad 120 \quad 1440 \quad 2580}{8 \qquad 28 \quad 28 \quad 28} \quad 2592\ \mu.$$

This species shows so much resemblance as to its general characters to the foregoing form, that I have thought it justified to bring it to the same

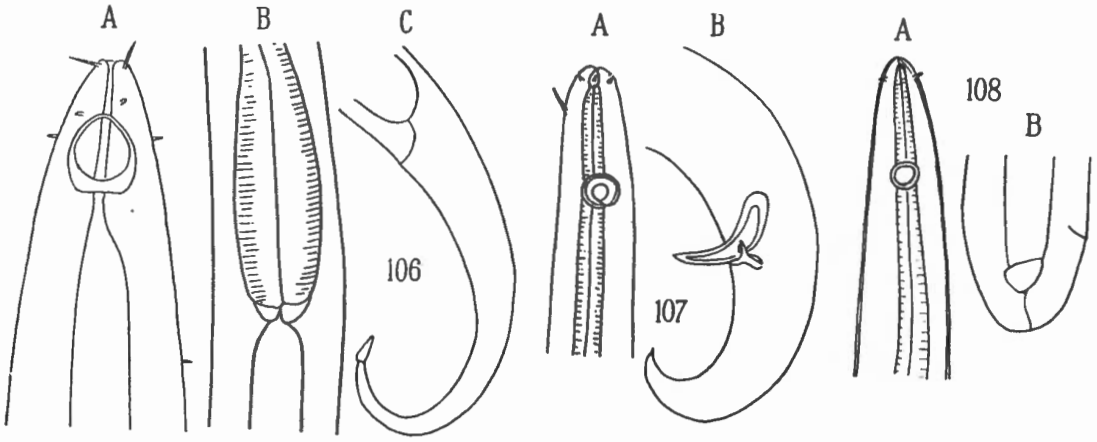

Fig. 106. — *Southernia elongata* n. sp.
A : Juvenile head end. B : Base of œsophagus. C : Tail.

Fig. 107. — *Rhabdocoma brevicauda* n. sp.
A : Male head. B : Male tail.

Fig. 108. — *Rhabdocoma cylindricauda* n. sp.
A : Female head. B : Female tail.

genus. Instead of 6 cephalic setae however I did find only 4 of them and as for the amphids they are quite circular like in the foregoing species but without a median dot, which is as far as I see without importance as one of the females of *Rhabdocoma brevicauda* too did not possess such dots.

Head end conical. Cephalic setae very short, 20 % of the corresponding diameter. Amphid circular, 3 cephalic diameters from the anterior end, 38,3 % of the corresponding body diameter. Buccal cavity inconspicuous. Oesophagus cylindrical. Tail short cylindrical, ending blunt. Tail almost as wide as long.

Genus PARATRIPYLOIDES n. gen

The present genus closely resembles *Tripyloides*, but differs from it i.a. by the absence of a tooth in the second department of the buccal cavity. There is a crown of 10 rather short cephalic setae. The genus possess amphids which are circular in outline and provided with a median dot. Their structure is in reality cryptospiral. Gubernaculum large, ressembling rather much that of *Tripyloides*, but differing from that in the lastnamed genus, in that we find no ring near its distal end. Spicula curved, although inconspicuously. Tail elongate cylindrical.

109. — **Paratripyloides longicauda** n. sp.

(Fig. 109, A, B.)

1 ♂, from Villefranche, between the « Lazareth » and « Anse passable », grey mud. Depth 50 m.

Dimensions :

Length : ♂, 1,192 mm; $\alpha = 29.8$; $\beta = 6,6$; $\gamma = 8,55$.

$$\frac{0 \quad 108 \quad 180 \quad M \quad 1052}{12 \quad\quad 32 \quad 40 \quad 24} \; 1192\ \mu.$$

Head rounded anteriorly. Lips with 6 minute labial papillae. We encounter a crown of cephalic setae composed of 10 elements. The submedian pairs of setae are subequal, the longer ones measure 32,5 % of the corresponding diameter, the shorter setae, 23,5 % of that same diameter, whereas the lateral setae are quite as long as the submedian longer setae. Amphids as described in the diagnose of the genus, their diameter measuring 37 % of the corresponding body diameter. They are separated from the anterior head end by a distance equal to 2,48 cephalic diameters. Buccal cavity with a conical anterior portion and a more cylindrical posterior portion.

Gubernaculum embracing the slightly curved almost straight spicula, measuring 77 % of the anal diameter. Tail like in other representants of the genus *Tripyloides* with a cylindrical, bluntly ending portion. Length of tail equal to 5,8 anal diameters. Width at the apex equal to 17 % of the anal diameter.

Ordo MONHYSTEROIDEA.

Family LINHOMŒIDÆ.

Genus METALINHOMŒUS De Man, 1907.

The present material contains as far as I could ascertain by a thorough comparison of the species in question at least 6 different species, which are easily distinguished by the shape of the tail, the structure of the amphids and the structure of the spicula in the male sex.

The genus *Metalinhomœus* is characterized by the fact, that the oral crown of setae is composed of 4 setae only, by the possession of a distinct oesophageal bulb and by the absence of a crossbar in the oral cavity.

110. — **Metalinhomœus breviseta** n. sp.

(Fig. 110. A-E.)

5 ♀ ♀, 11 juv. from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus. Depth 3 m.

1 ♂, 1 juv. from Villefranche, off the « Vieux Villefranche », black mud and organic detritus. Depth 20 m.

Dimensions :

Length juv., 2,27 mm; $\alpha = 33,5$; $\beta = 10,9$; $\gamma = 5,7$.

0	132	208	232	1880	2272 µ.
32		64	68	52	

♂, 1,916 mm; $\alpha = 31,8$; $\beta = 10$; $\gamma = 7,77$.

0	123	192	224	M	1664	1916 µ.
32			64	60	52	

Head bluntly rounded anteriorly, without distinct lips. Labial setae, 4 in number, rather short, 28,7 % of the corresponding diameter in the male, 36,6 % in the juvenile. Subcephalic setae, 6 in number, just posteriorly to the amphids, minute, measuring no more than 12,5 % of the corresponding diameter in the male sex, or 61 % of the labial setae. Amphids apparently circular, but on closer observation finely spiral, the spiral composed of 3 ½ circumvolutions. Diameter of the amphids hardly surpassing the width of the cylindrical buccal cavity, i.e. 28,2 % of the corresponding diameter. Buccal cavity cylindrical, its wall strengthened by cuticular bars, divided in the middle of their length by a kind of constriction. In juvenile specimens this broken line is not yet encountered. There the oral cavity is cylindrical throughout, without subdivisions. Longitudinal folds may however be present.

Oesophagus cylindrical, with a posterior bulb and a distinct cardiac portion, the latter measuring 25 % of the whole oesophageal length. Excretory pore at 64 % of the oesophageal length.

Genital armature : Spicula long and curved, nooked at their proximal end. Here the spicula are provided with a longitudinal ridge; distally they are pointed. Spicular chord, equal to 1,7 anal diameters. Gubernaculum with slightly retrorse rather long apophysis, its length 71 % of the anal diameter.

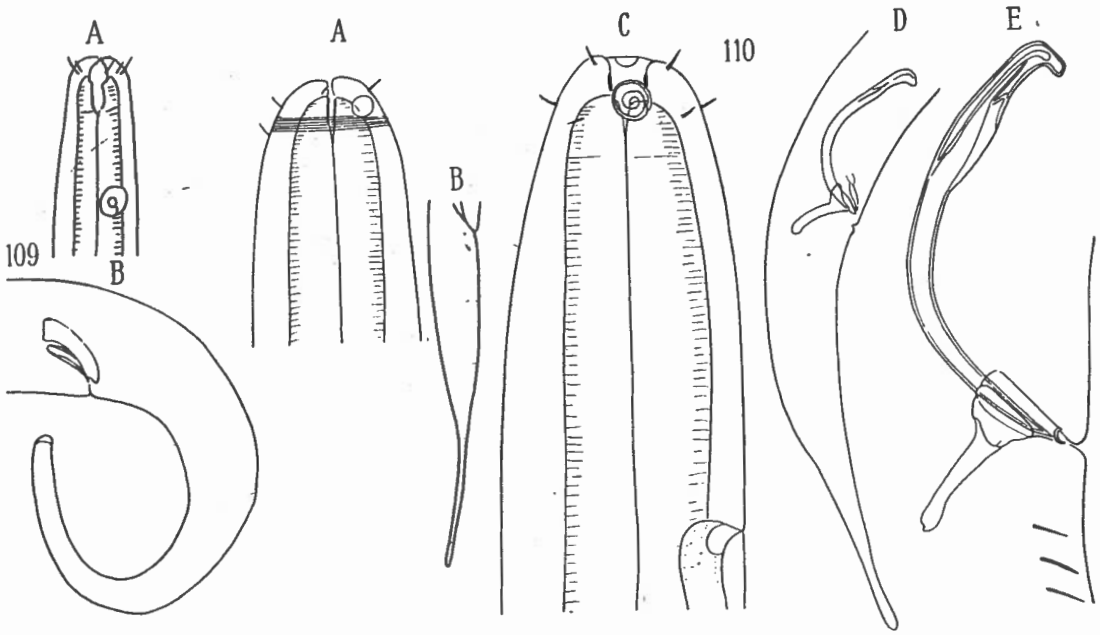

FIG. 109. — *Paratripyloides longicauda* n. sp.
A : Male head. B : Male tail.

FIG. 110. — *Metalinhomœus breviseta* n. sp.
A : Female head. B : Female tail. C : Male head. D : Male tail.
E : Male genital armature.

The gubernaculum embraces the apex of the spicula caplike. Tail in the male as well as in the female sex almost cylindrical, then gradually attenuated, ending with a narrow flagellum which is blunt at apex. Length of tail 5 anal diameters.

MICOLETZKY's *Linhomœus* spec. 1 of which this author encountered a juvenile specimen on the port wall in Suez probably belongs to the present species.

The species is closely related with *Linhomœus filiformis* FILIPJEV from the Black Sea, but may be distinguished from the latter by the pilosity of the head end, and by the greater length and somewhat different shape of the spicula. Amphids more in front than in *filiformis*.

111. — **Metalinhomœus cylindricauda** n. sp.

(Fig. 111, A-G.)

2 ♂♂, 1 juv. from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus. Depth 3 m.

KREIS (1926) has found at Naples *Metalinhomœus elegans* KREIS, which species is closely related as well with our species as with *M. zosterœ* FILIPJEV. It is of smaller size than *zosterœ* but may be distinguished from the latter

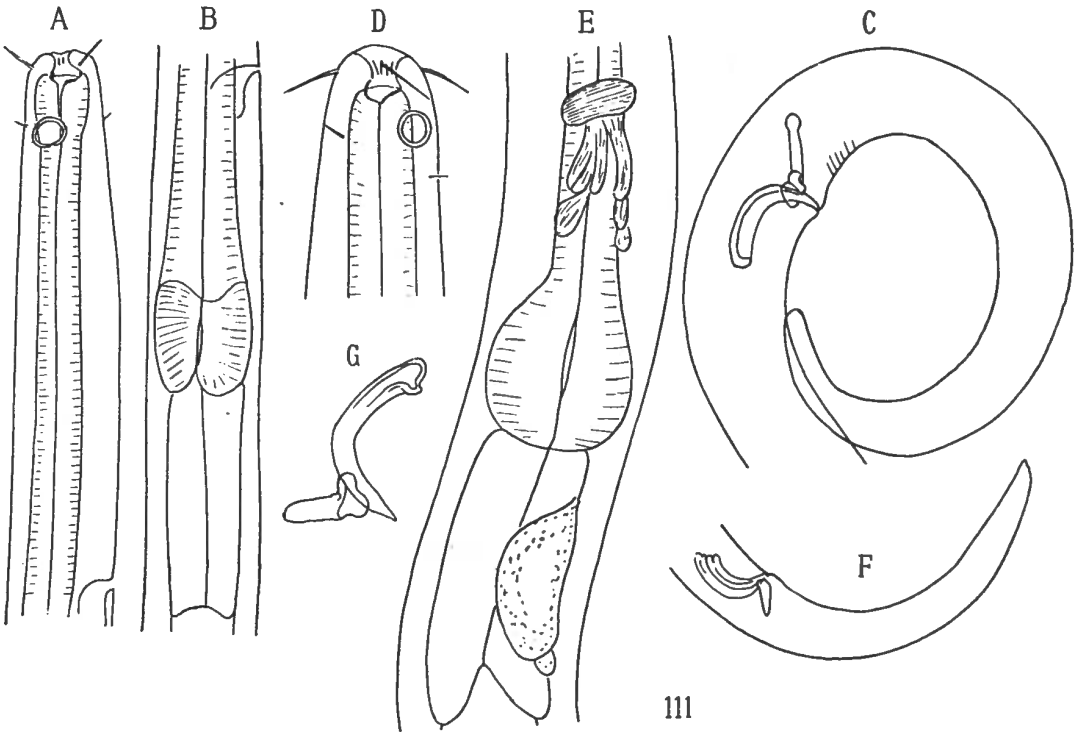

FIG. 111. — *Metalinhomœus cylindricauda* n. sp.

A : Male head. B : Base of œsophagus of same male. C : Male tail of the same. D : Head of another male (²). E : Base of œsophagus with ventral gland. F : Tail of the same male. G : Male genital armature.

species in the main by the position of the vulva, which has shifted far backwards. The present species resembles *M. zosterœ* very much, but possesses a more cylindrical, less attenuated tail and longer cephalic setae. Moreover we encounter subcephalic setae, which *zosterœ* misses. From *M. elegans* it differs in the structure of the oesóphagus. So I think the species in question should be new.

Dimensions :

Length : ♂, 2,536 mm; $\alpha = 70,4$; $\beta = 17,1$; $\gamma = 13,4$.

$$\frac{0 \quad 92 \quad 148 \quad M \quad 2348}{16 \quad\quad 28 \quad 36 \quad 24} \; 2536\ \mu.$$

♂ 2, 1,98 mm; $\alpha = 71,8$; $\beta = 17,2$; $\gamma = 13,4$.

$$\frac{0 \quad 140 \quad M \quad 1820}{12 \quad 20 \quad 20 \quad 24} \; 1980\ \mu.$$

♂. Head rounded anteriorly, crowned with 4 rather long cephalic setae, 4 in number and measuring 68,5 % of the cephalic diameter. Subcephalic setae short, placed just posterior to the amphids. Amphids circular, 27 % of the corresponding diameter. Oral cavity like in *zosteræ* with a longitudinally striated vestibulum and an oral pit of which the base and the erect walls are cuticularized. Oesophagus with a distinct posterior bulb. Nerve ring at 62 % of the oesophageal length. Cardia elongate. Ventral gland with supplementary cell. Excretory pore at 8,2 cephalic diameters from the anterior head end. Genital armature consisting of spicules resembling much those of *elegans*. Spicules strongly curved, with a partial longitudinal crest. Proximal end somewhat enlarged but not swollen. Distal end pointed. Length of spicula 1 anal diameter. Gubernaculum broad at its distal end, with a cylindrical dorsal apophysis. Length of the cylindrical tail 6,2 anal diameters.

The species in question resembles *Monhysteriella* (*Rhabdinema*) *elegans* Kreis from Trébeurden. It may however be distinguished from that form by its longer size, the presence of an elongate cardia and by differences in the pilosity of the oesophageal portion.

112. — **Metalinhomœus attenuatus** n. sp.

(Fig. 112, A-C.)

1 ♀, from Villefranche, between the « Lazareth » and « Anse Passable », grey mut. Depth 50 m.

Dimensions :

Length : ♀, 2,572 mm; $\alpha = 64,3$; $\beta = 17$: $\gamma = 9,2$; V. = 48 %.

The present species may be easily distinguished from the foregoing by the shape of the tail which is more filiform and effilate.

Head bluntly rounded anteriorly with a crown of 4 cephalic setae, measuring each 59 % of the corresponding cephalic diameter. Subcephalic setae in front of the amphids, half as long as the cephalic setae. Amphids cryptospiralic in structure, 42,5 % of the corresponding diameter. Buccal cavity undeep, the vestibulum passes into the lower portion of the buccal cavity

without constriction or limitation. Walls of buccal cavity not cuticularized. Vestibulum ribbed. Bottom of cavity strengthened. Oesophagus with a prominent posterior bulb and a distinct cardia. Nerve ring at 68 % of the total oesophageal length. Tail elongate, 11,5 anal diameters long, slightly swollen at its tip. Width at apex 15,7 % of the anal diameter.

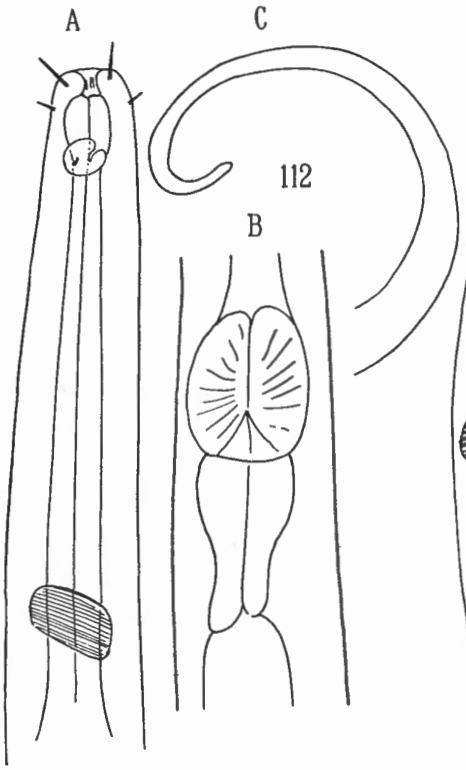

Fig. 112. — *Metalinhomœus attenuatus* n. sp.
A : Female head end.
B : Base of œsophagus.
C : Female tail.

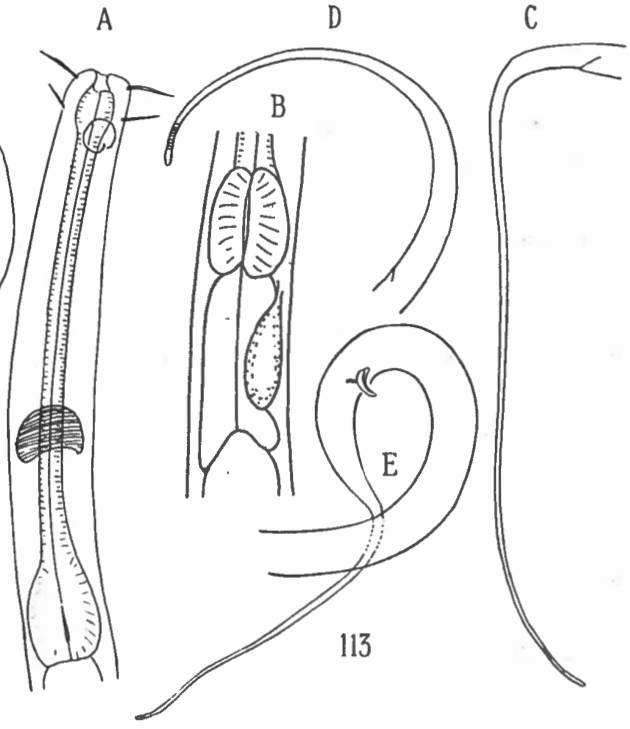

Fig. 113. — *Metalinhomœus effilatus* n. sp.
A : Female head end.
B : Base of œsophagus with ventral gland.
C : Female tail. D : Tail of juvenile.
E : Male tail.

113. — **Metalinhomœus effilatus** n. sp.

(Fig. 113, A-E.)

1 ♀, from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus.

1 ♂, from Villefranche, off the « Pointe de la Gavinette », grey mud.

Dimensions :

Length : ♀, 2,3 mm; $\alpha = 96$; $\beta = 16,4$; $\gamma = 7,4$; V. = 51,5 %.

0	64	120	1180	1980	2300 µ.
12		20	24	20	

Dimensions :

Lenght : ♂, 3,46 mm; $\alpha = 8{,}65$; $\beta = 17{,}3$; $\gamma = 8{,}23$.

$$\frac{0 \quad 120 \quad 200 \quad M \quad 3040}{16 \quad 40 \quad\quad 40 \quad 40} \; 3460$$

The species in question, closely allied to *Metalinhomœus attenuatus*, may be easily distinguished from it by the filiform flagellum, the longer subcephalic setae and the less pronounced cuticularisation of the buccal cavity.

Head flattened anteriorly, crowned with 4 long setae, each 80 % of the corresponding cephalic diameter. The setae of the second crown are distinctly shorter and measure only 50 % of the corresponding diameter. Amphids cryptospiral, composed of a single winding, measuring 50 % of the corresponding diameter, at 1 cephalic diameter from the anterior head end. Buccal cavity elongate cylindroconical. No buccal plates observed. Oesophagus widened anteriorly, then cylindrical, with a distinct, although not very prominent posterior bulb, occupying 17,7 % of the total oesophageal length. Cardia elongate, accompanied by a distinct ventral gland cell. Tail filiform, with a long flagellum, 28,5 anal diameters long.

The male genital armature consists of double curved, anvil-shaped spicula, only 75 % of the corresponding diameter long and a guttershaped gubernaculum with dorsal apophysis. Tail as in the female, 11 anal diameters long.

114. — **Metalinhomœus obtusicaudatus** (De Man, 1889).

(Fig. 114, A-D.)

1 ♂, 2 ♀♀, 2 juv. from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*.

Dimensions :

Length : juv. 1, 2,544 mm; $\alpha = 57{,}8$; $\beta = 13{,}2$; $\gamma = 19{,}2$.

$$\frac{0 \quad 120 \quad 192 \quad 2412}{28 \quad\quad 44 \quad 32} \; 2544\ \mu.$$

♀ 1, 2,772 mm; $\alpha = 53$; $\beta = 12{,}4$; $\gamma = 19{,}8$; V. = 73 %.

$$\frac{0 \quad 124 \quad 224 \quad 312 \quad 2032 \quad 2632}{32 \quad\quad 44 \quad\quad 52 \quad 40} \; 2772\ \mu.$$

♂ 1, 2,364 mm; $\alpha = 53{,}8$; $\beta = 11{,}6$; $\gamma = 14{,}8$.

$$\frac{0 \quad 116 \quad 204 \quad M \quad 2204}{24 \quad\quad 40 \quad 44 \quad 40} \; 2364\ \mu.$$

Micoletzky (1924) did describe the same species after specimens from Suez and the Adria, whereas De Man has found the same species in the Channel.

Head flattened anteriorly with a crown of 4 rather long cephalic setae, measuring 41 % of the corresponding diameter. Amphids opposite to the cylindrical mesostome, circular, cryptospiral, 25,5 % of the corresponding body diameter, comparatively smaller than in the specimens from Micoletzky where they measured 30-33 % of the same diameter.

Buccal cavity with a rather wide longitudinally striated vestibulum and a cylindrical mesostom with cuticularized walls. Oesophagus cylindrical. Nerve ring at 67 % of the oesophageal length. Tail short, conical, ending

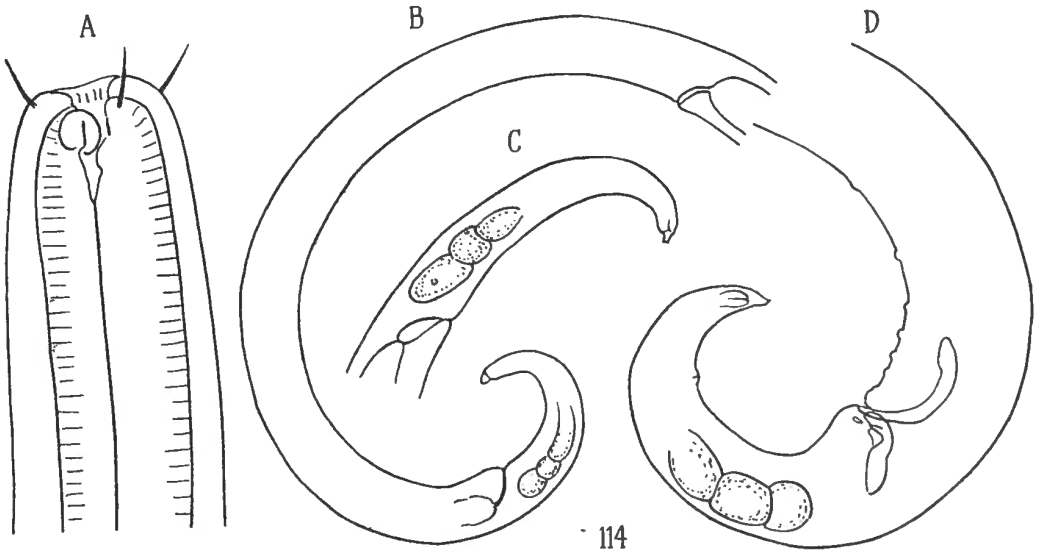

Fig. 114. — *Metalinhomœus obtusicaudatus* (De Man).
A : Female head. B C : Female tail ends. D : Male tail.

bluntly with a distinct spinneret. Length of tail 4 anal diameters. Three caudal glands in tandem position. In the male the tail is strongly curved ventrally. It measure about 4 anal diameters. The spiculum is likewise strongly curved, its chord measures 90 % of the anal diameter. Its proximal end is headed, distally it is pointed. Gubernaculum measuring 0,6 anal diameter, with broad apophysis; its distal end ambracing the spicula. I counted 8 praeanal papillae, those next to the cloaca narrowly spaced, the papillae 5-8 gradually more widely spaced. Tail with three caudal glands in tandem position and a spinneret at apex.

Geographical distribution : French Channel, Adria, Rovigno, Meleda, Ombla Bay, Bocche di Cattaro, Suez, Villefranche, Banyuls, Sea of Marmara.

115. — **Metalinhomœus pilosus** n. sp.

(Fig. 115, A-C.)

1 ♀, from Villefranche, off the Station, coarse sand under vegetation of *Posidonia*. Depth 15 m.

Dimensions :

Length : ♀, 3,068 mm; $\alpha = 76,7$; $\beta = 11,4$; $\gamma = 15,2$; V. = 48,6 %.

FILIPJEV's formula :

0	140	268	1488	2868	
32		40	36	28	3068 µ.

I should be inclined to reckon the present species to the species *Eulinhomœus ponticus* FILIPJEV to which it resembles very much, was not the cephalic crown of setae of the latter species composed of 10 elements, in stead of 4. FILIPJEV's states to have found 4 long setae and 6 minute setae. In FILIPJEV's specimen the vulva is situated at 38,5 % of the body length. For the rest the dimensions are rather similar.

FILIPJEV's ♀ measured : 3.4 mm; $\alpha = 83$; $\beta = 12$; $\gamma = 17$.

In our specimen, which I have named *pilosus*, the head is flattened in front. It bears a crown of 4 rather long setae, that measure 60 % of the corresponding cephalic diameter. Behind the first crown we encounter a rather great number of shorter setae, placed more or less in submedian longitudinal rows. Amphids circular, measuring 33 % of the corresponding body diameter. Vestibulum wide, followed by a mesostome, that may be closed by cuticular plates, that surround it. Metastome short. Oesophagus cylindrical, swollen posteriorly, but without distinct bulb. At the utmost we find an elongate bulb, but this is not sharply demarcated. Cardia elongate like in the other species of the genus. Nerve ring at 54 % of the oesophageal length. End of ventral gland just opposite to the cardia. Tail elongate cylindrical, containing the caudal glands in tandem position. The shape of the tail is quite similar to that in *Linhomœus ponticus* FILIPJEV. Length equal to 6 anal diameters.

Genus PARALINHOMŒUS DE MAN, 1907.

116. — **Paralinhomœus elongatus** n. sp.

(Fig. 116, A-C.)

1 juv. from Villefranche, farther end of the « Pointe de la Darse », black mud and organic detritus. Depth 3 m.

Dimensions :

Length : juv., 2,936 mm; $\alpha = 45,7$; $\beta = 10,62$; $\gamma = 11,25$.

0	116	120	276	M	2676	
36			64	60	44	2936 µ.

The species is closely related to *P. tenuicaudatus* (Buetschli) but differs from the latter i.a. by the size of the cephalic setae and by the shape of the tail, which is less effilate than in that species.

Head flattened anteriorly with 10 cephalic setae, of which the longer partners of the 4 submedian pairs are considerably longer than the 6 very minute setae of the anterior crown. These longer submedian setae measure 21,5 % of the corresponding diameter. Amphids circular, cryptospiral, measuring

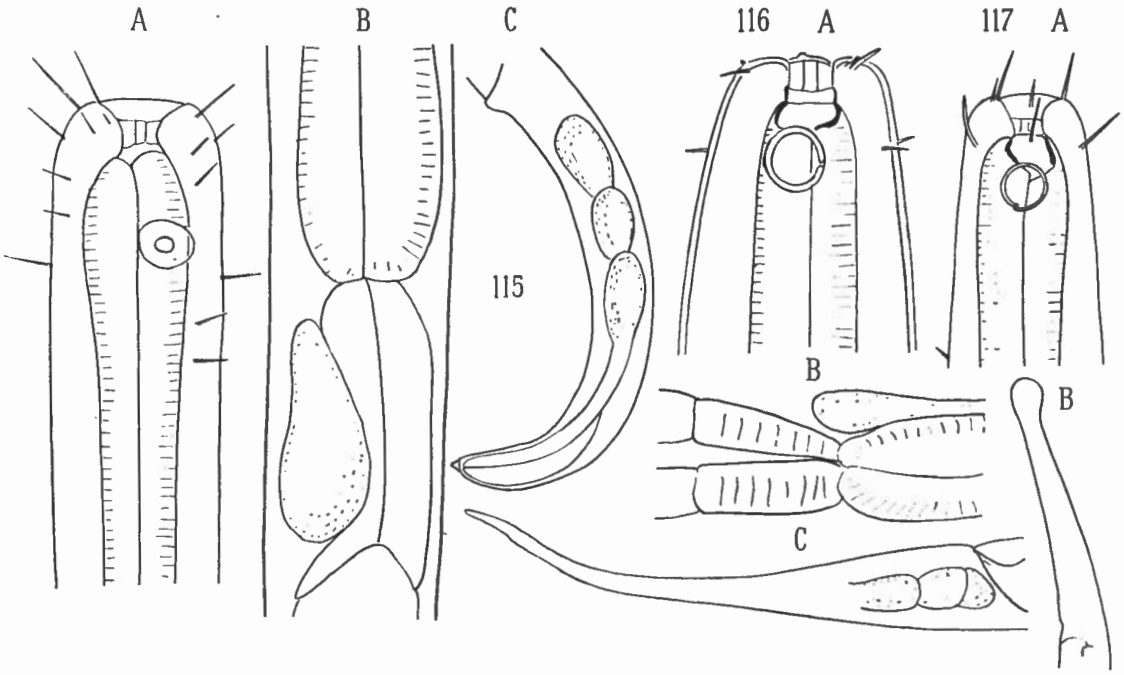

Fig. 115. — *Metalinhomœus pilosus* n. sp.
A : Female head. B : Base of œsophagus with ventral gland. C : Female tail.

Fig. 116. — *Paralinhomœus elongatus* n. sp.
A : Juvenile head end.
B : Base of œsophagus. C : Tail.

Fig. 117. — *Paralinhomœus clavicaudatus* n. sp.
A : Female head end.
B : Tail of the same.

30,8 % of the corresponding body diameter. At a level with the amphids one finds some small setae. Buccal cavity : vestibulum wide with distinct, but few longitudinal ridges, leading into the short, but wide mestostome, which is separated from the metastome by a cuticular fold. Both meso- and metastome possess strongly cuticularized walls. Oesophagus cylindrical, hardly swollen at its posterior end. Cardia likewise cylindrical. Excretory gland ending at the junction of cardia and the posterior end of oesophagus. Excretory pore just in front of the nerve ring which is situated at 43,5 % of the oesophageal length. Tail elongate, pointed at its tip, presenting 3 caudal glands in tandem position. Length of tail equal to 6,1 anal diameters.

117. — **Paralinhomœus clavicaudatus** n. sp.

(Fig. 117, A, B.)

1 ♀, from Villefranche, off the « Plage des Marinières », coarse sand under vegetation of *Posidonia*. Depth 3 m.

Dimensions :

Length : ♀, 2,016 mm; $\alpha = 50{,}4$; $\beta = 11{,}8$; $\gamma = 15{,}25$; V. = 58 %.

0	16	80	172	1164	1684	2016 µ.
24			36	40	28	

Head rounded anteriorly, crowned by 10 cephalic setae of unequal size, the longer partners of the submedian pairs measuring 63,5 % of the corresponding diameter, the shorter ones 39,5 % of that same diameter. A second crown of longer hairs is found on half the distance between the anterior head end and the amphids. These setae measure 41,3 % of the corresponding diameter. Amphids circular, cryptospiral, 37,2 % of the body diameter wide. Oesophagus cylindrical, elongate. Nerve ring at 46,5 % of the oesophageal length. Tail short elongate with a terminal swelling. Tail 6 anal diameters long.

Apart form the fact, that there are only 4 cephalic setae in representants of *Desmolaimus*, the present species resembles in many respects *Desmolaimus elongatus* Allgén from the Öresund.

118. — **Paralinhomœus ostrearum** Filipjev, 1918-1921.

(Fig. 118, A-C.)

1 juv. from Villefranche, off the « Vieux Villefranche », black mud and vegetal detritus. Depth 20 m.

Dimensions :

Lenght : 1 juv., 3,06 mm; $\alpha = 38$; $\beta = 12{,}8$; $\gamma = 25{,}5$.

0	120	240	280	2950	3060 µ.
48		76	80	60	

Head flattened anteriorly with 10 short, equally long, conical setae, not longer than 14,2 % of the corresponding diameter. The cephalic setae were distinctly longer in Filipjev's form (compare his fig. 58 *c*). At a level with the amphids 2 setae in the submedian meridians, not longer than 10 % of the corresponding body diameter. Amphids circular, cryptospiral, with a broad outer rim. Diameter of the amphids, 28 % of the corresponding body diameter. Buccal cavity subdivided into 3 divisions, a short vestibulum, followed by a rather long mesostome, with vigorous, strongly cuticularized plates and a metastome at the bottom of which two cuticular blades are encountered. Walls of metastome cuticularized. Oesophagus cylindrical, not distinctly swollen at its

posterior end. Cardia short, cylindrical. Tail very short, bluntly rounded. It corresponds to Filipjev's figure 58 *b*, not to 58 *c*. In Filipjev's figure 58 *b* the tail of a female is depicted, which in the present case should be quite distinct from that of a male, where we should have a filiform tip. In Filipjev's

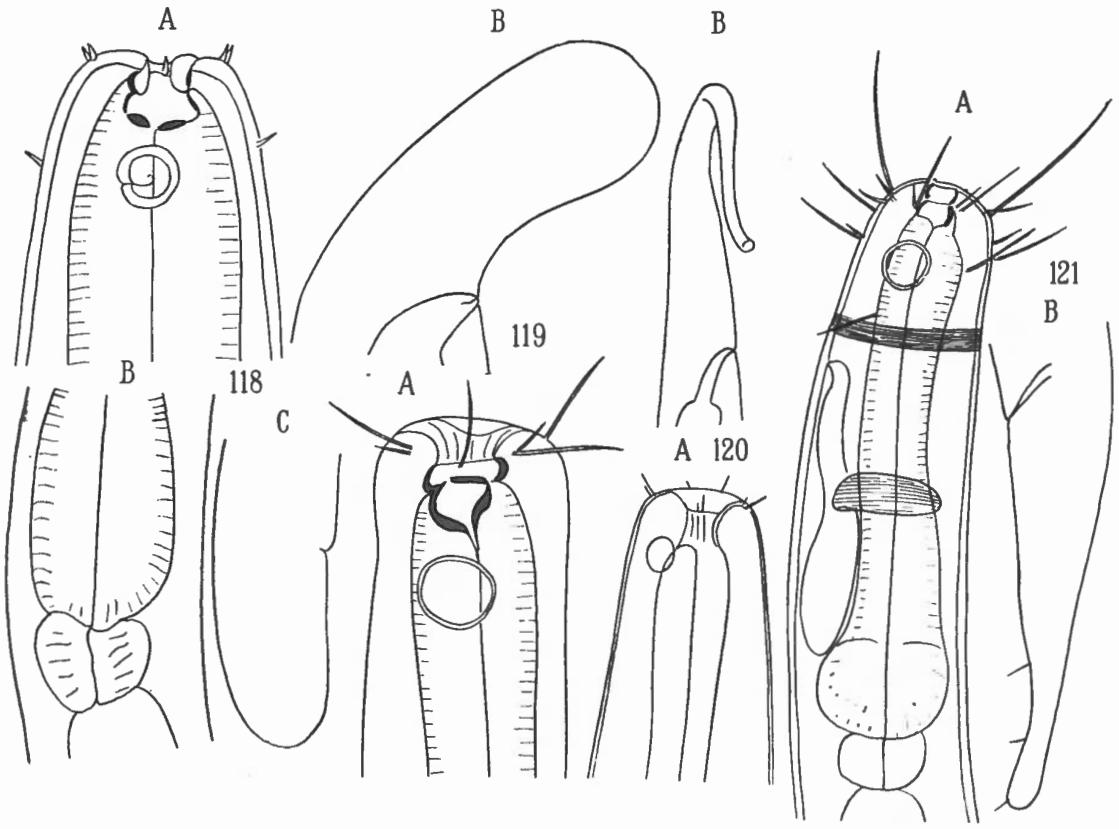

Fig. 118. — *Paralinhomœus ostrearum* Filipjev.
A : Juvenile head end.
B : Base of œsophagus. C : Tail.

Fig. 119. — *Paralinhomœus brevicaudatus* n. sp.
A : Juvenile head end.
B : Tip of tail.

Fig. 120. — *Paralinhomœus brevibucca* n. sp.
A : Juvenile head end.
B : Tail.

Fig. 121. — *Perilinhomœus longisetosus* n. sp.
A : Juvenile head end.
B : Tail.

female, of which we do not know the whole length, the tail was almost as long as the anal diameter is wide. In the present juvenile the length of the tail equalled to 1,66 anal diameters.

Allgén's *Paralinhomœus strandibrevicaudatus* is closely related with the present species.

Geographical distribution : Black Sea, Mediterranean, Villefranche, further Trébeurden.

119. — **Paralinhomœus brevicaudatus** n. sp.

(Fig. 119, A, B.)

1 juv. from Villefranche, off the Station, coarse sand under vegetation of *Posidonia*. Depth 15 m.

At first I thought the specimen belonged to *L. mirabilis* Bütschli, but closer observation learned me that it belonged to the genus *Paralinhomœus*.

Dimensions :

Lenght : juv., 2,104 mm; $\alpha = 40{,}05$; $\beta = 8{,}1$; $\gamma = 32{,}8$.

$$\frac{0 \quad 260 \quad 2040}{40 \quad 52 \quad 44} \; 2104\ \mu.$$

Head rounded anteriorly and slightly swollen. Cephalic setae, 20 in number, forming a single crown. Lateral setae unpaired, submedian setae paired, unequal, the longer ones 68 % of the corresponding cephalic diameter, the shorter ones measuring 21 % of the same diameter only. Amphids comparatively large, 41 % of the corresponding diameter, immediately posterior to the buccal cavity. Buccal cavity subdivided into three portions, vestibulum with longitudinal ridges, mesostome short, with cuticularized walls, separated from both pro- and metastome by constrictions, metastome much narrower and distinctly heavier cuticularized than the mesostom. At its fore border we find a cross bar. Tail short and blunt, rounded posteriorly, 2 anal diameters long.

From *L. mirabilis* Buetschli the species in question may be distinguished by the longer cephalic setae, the absence of cervical setae, the larger amphids and by differences in the structure of the buccal cavity.

120. — **Paralinhomœus brevibucca** n. sp.

(Fig. 120, A, B.)

1 juv. from Villefranche, off the « Pointe de la Gavinette ». Depth 8 m.

The specimen in question shows resemblance as well with *Metalinhomœus breviseta*, from which it may be distinguished by the greater number of cephalic setae (10 instead of 4), as with *Paralinhomœus ostrearum* Filipjev. In the female sex *Paralinhomœus ostrearum* is in the possession of a cylindrical tail, whereas the male has after Filipjev (consult his fig.58 *c*) a different sort of tail; elongate conical with a filiform tip.

It is doubtfull if Filipjev's male and female belong to the same species.

Dimensions :

Length : juv., 2,22 mm; $\alpha = 37{,}8$; $\beta = 9{,}1$; $\gamma = 8{,}25$.

$$\frac{0 \quad 100 \quad 200 \quad 1600}{24 \quad 48 \quad 48} \; 2220\ \mu.$$

Head rounded anteriorly crownded with 10 setae, the partners of the submedian pairs almost equal in size, measuring 25 % of the corresponding

diameter. Buccal cavity with longitudinal ribs, cylindrical. Tail elongate cylindrical with a terminal filiform portion. Length of that portion 39,25 % of the whole tail length, which is 6 anal diameters long. If the specimen in question had been in the possession of 6 cephalic setae in stead of 10 I would not have hesitated to bring it to the species *Metalinhomœus breviseta* Schuurmans Stekhoven.

Genus PERILINHOMŒUS n. gen.

The following species based on a juvenile specimen shows some particulars, that necessitate to create a new genus for it. The head bears 6 groups of 2 setae each, therefore 12 setae in total. The peculiarity is, that we do not encounter mediolateral isolate hairs, but that there are 2 groups of 2 setae of unequal length each, that are paralateral in position. The buccal cavity is cylindrical, but divided into 2 separate cavities by a median constriction. The cuticularisations of the walls are broken. Cervical setae rather numerous. Excretory gland short. Posterior end of it in front of the oesophageal bulb.

121. — **Perilinhomœus longisetosus** n. sp.

(Fig. 121, A, B.)

1 juv. from Villefranche, off the « Vieux Villefranche », black mud and organic detritus. Depth 20 m.

Dimensions :

Length : juv., 2,992 mm; $\alpha = 83$; $\beta = 24{,}8$; $\gamma = 22{,}5$.

The species in question is characterized by the very long dorsal and ventral setae of the cephalic crown, the short ventral gland and the cylindrical cardia.

Head rounded anteriorly, with distinct labial papillae. Crown of cephalic setae composed of 12 setae, of which the dorsal and ventral pairs are composed of one very long seta, surpassing in length the cephalic diameter = 1,6 cephalic diameter, whereas the shorter partner measures 50 % of the same diameter. The sublateral pairs are likewise of unequal size, the longer partner measuring 72 % of the cephalic diameter, the shorter 32 % of the same diameter. Apart from this cephalic crown there is a second crown of comparatively long setae, at a level with the diameter of the amphids, composed of at least 6 components, these measuring 65,8 % of the corresponding diameter. Amphids circular, 35 % of the corresponding diameter. Cuticle finely ringed. There is moreover a single unpaired hair just posteriorly to each amphid. Buccal cavity rather wide, composed of two cylindrical portions, each with cuticularized walls, separated from each other by a constriction. Vestibular longitudinal folds indicated. Oesophagus cylindrical, swollen posteriorly but without a true

bulb. Cardia short, cylindrical. Ventral gland ending immediately in front of the posterior swelling of the oesophagus. Excretory pore at 34,5 % of the oesophageal length. Nerve ring at 57,5 % of the oesophageal length.

Tail elongate conical with a slightly attenuated cylindrical portion, slightly swollen at its apex with some subventral setae. Tail 3,65 anal diameters long.

The species in question resembles *Paralinhomœus viscosus* ALLGÉN but may be easily distinguished from it by size and distribution of its cephalic setae as well as by the shape of the tail.

Genus PARACHROMOGASTERIELLA ALLGÉN, 1933.

In 1933 ALLGÉN has created his new genus *Parachromogasteriella* for *P. cylindricauda* ALLGÉN, which this author brought to the relationship of *Arœolaimus* and *Odonthophora* in the Family of *Axonolaimidæ*. ALLGÉN's figures although apparently taken after specimens in a bad state of fixation bring me to the conviction that this author had to do with a representant of the *Linhomœidæ* family. I transfer therefore ALLGÉN's genus to the *Linhomœidæ*. The structure of the amphids, which are cryptospiral like in so many Linhomoeids, the structure and pilosity of the head end make me suppose that we have to do with a Linhomoeid species.

Now I encountered in the material from Villefranche the female of a species, which apparently belongs to the same genus and which undoubtedly has to be reckoned to the *Linhomœidæ* family, like for instance may be concluded from the presence of a cardia. As further characteristics I mention the presence of a rhabditoid cylindrical buccal cavity, the presence of only 4 cephalic setae, just like in ALLGÉN's species, double ovaries, a conicocylindrical tail. For the present species I propose the name *Parachromogasteriella conicauda.*

122. — **Parachromogasteriella conicauda** n. sp.

(Fig. 122, A-D.)

1 ♀, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

Dimensions :

Length : ♀, 0,996 mm; $\alpha = 22{,}5$; $\beta = 5{,}65$; $\gamma = 10$; V. = 61 %.

0	104	176	204	616	896	996 µ.
8		32		44	28	

Head bluntly rounded anteriorly. No distinct labial papillae but 4 cephalic setae, measuring 25 % of the corresponding cephalic diameter. Amphids large, circular in outline, but in reality spiral, their width 63 % of the corresponding diameter. Buccal cavity rhabditiform, prostome with small rhabdions, mesostome cylindrical elongate. The anterior portion of the oesophagus is cylin-

drical and slightly narrower than the next muscular part. Nerve ring embracing the muscular part, at 59 % of the total oesophageal length. Oesophagus proper followed by an apple-shaped cardia. Vulva with two vulvar glands. Tail conical with 3 caudal glands in tandem position. Length of tail equal to 4 anal diameters.

Genus TERSCHELLINGIA De Man, 1888.

123. — **Terschellingia heteroseta** n. sp.

(Fig. 123, A, B.)

6 ♂, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

This species closely resembles *Terschellingia pontica* Filipjev. In the genus *Terschellingia* however the oral cavity should be almost or quite absent. Since the present species possesses a rather wide buccal cavity with distinct longitudinal ridges, one should be inclined to bring it to the genus *Metalinhomœus*. Yet I believe that it in reality belongs to the genus *Terschellingia*, because I found in *Terschellingia antonovi* Filipjev, next to specimens, in which apparently no or only a slitlike buccal cavity was found, other individuals, which presented more widely opened buccal cavities that showed similar longitudinal ridges in their buccal cavities as the present species. The present species is characterized by the very long filiform tail, that is almost 24 anal diameters long against not quite 10 anal diameters in *T. pontica*, by the large size of its amphids, which however might probably be due to sex and by differences in size between the cephalic and subcephalic setae. The latter are distinctly much longer than the former.

Dimensions :

Length : ♂, 1,328 mm; $\alpha = 33{,}2$; $\beta = 10{,}3$; $\gamma = 5{,}5$.

$$\frac{0 \quad 80 \quad 128 \quad M \quad 1088}{14 \quad\quad 32 \quad 40 \quad 28} \; 1328\ \mu.$$

Head bluntly rounded anteriorly with 4 short cephalic setae, not longer than 27,8 % of the corresponding diameter. Subcephalic setae at the lower border of the amphids, 1,6 times as long as the cephalic setae and 38 % of the corresponding diameter. Amphids large, 58,5 % of the corresponding body diameter. Buccal cavity comparatively wide, cylindrical. Oesophagus cylindrical, widened to a prominent posterior bulb, that measures 25 % of the total length of the oesophagus. Nerve ring at 56 % of the whole oesophageal length. Genital armature. Spicula curved, distinctly knobbed at their proximal end, where one finds a longitudinal ridge over a short distance. Distal end pointed. Gubernaculum broad at its distal end, embracing the spicula. Manubrium of the same short, ending bluntly. Tail long, filiform, almost 24 anal diameters long, provided with a long flagellum.

As for their indices *Terschellingia pontica* and *heteroseta* fall into the same scheme. The pilosity of both sexes however is as far as is known for the present moment always quite similar. The tail, especially the flagellum of *T. heteroseta* is distinctly longer than in *pontica*. We must however always

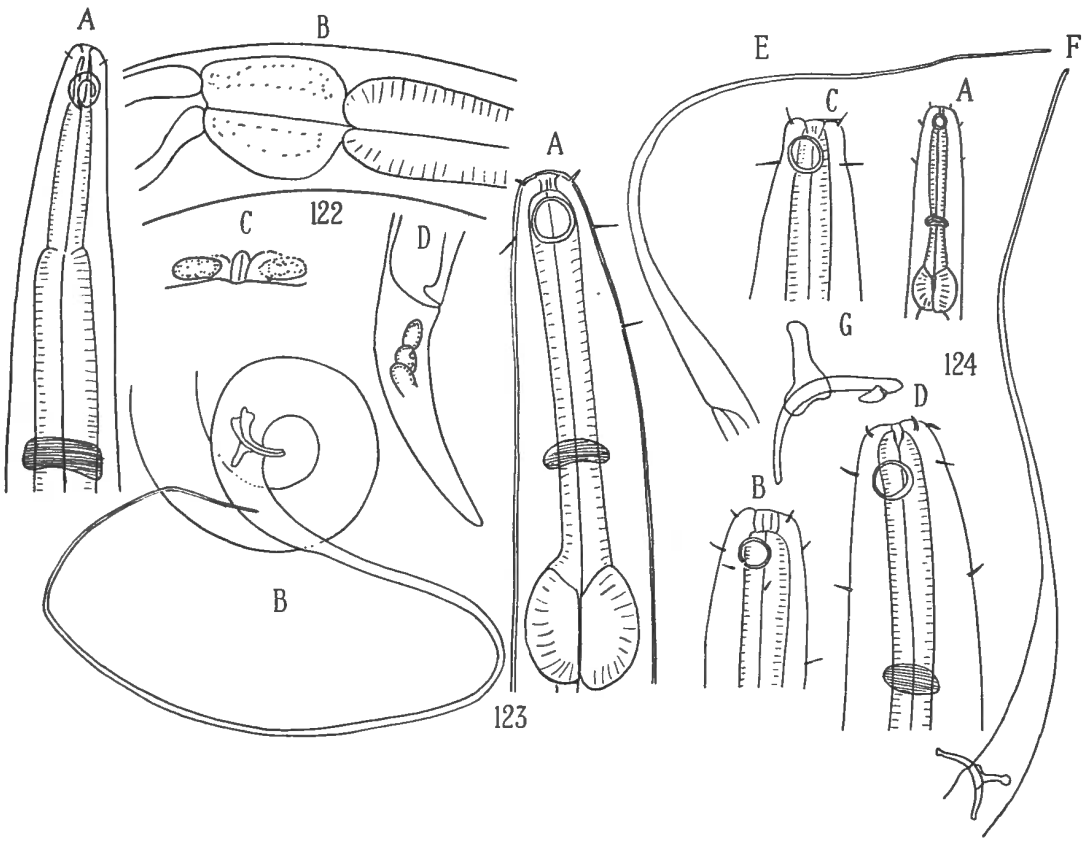

FIG. 122. — *Parachromogasteriella conicauda* n. sp.
A : Female head end.
B : Base of œsophagus.
C : Vulva with glands.
D : Female tail.

FIG. 123. — *Terschellingia heteroseta* n. sp.
A : Male head end. B : Male tail.

FIG. 124. — *Terschellingia antonovi* FILIPJEV.
A : Head end.
B C : Female head ends.
D : Male head end.
E : Female tail.
F : Male tail.
G : Male genital armature.

be aware, that such a long filiform tail may be partly broken off and healed. I have however the impression that this was not the case in the specimen of *pontica* studied by FILIPJEV. So I feel justified in creating a new species for the present male.

124. — Terschellingia antonovi Filipjev, 1922.

(Fig. 124, A-G.)

8 ♂♂, 9 ♀♀, 11 juv. from Villefranche, off the « Vieux Villefranche », black mud and organic detritus. Depth 20 m.

3 ♀♀, from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

Dimensions :

Length : ♂, 1,68 mm; $\alpha = 35$; $\beta = 12$; $\gamma = 4{,}2$.

$$\frac{0 \quad 80 \quad 140 \quad M \quad 1280}{16 \qquad 36 \quad 48 \quad 28} \quad 1680\ \mu.$$

♀ 1, 1,6 mm; $\alpha = 40$; $\beta = 12{,}5$; $\gamma = 3{,}12$; V. = 43,4 %.

$$\frac{0 \quad 128 \quad 688 \quad 1088}{16 \quad 32 \quad 40 \quad 30} \quad 1600\ \mu.$$

♀ 2, 1,564 mm; $\alpha = 43{,}4$; $\beta = 12{,}6$; $\gamma = 3{,}42$; V. = 40 %.

$$\frac{0 \quad 68 \quad 124 \quad 624 \quad 1104}{16 \qquad 36 \quad 32 \quad 24} \quad 1564\ \mu.$$

Filipjev's : ♀, 1,9 mm; $\alpha = 55{,}$; $\beta = 17$; $\gamma = 3{,}5$; V. = 39 %.

Head rounded anteriorly to more bluntly truncate. Lips with 4 short cephalic setae, measuring 33,4 % of the corresponding diameter. Subcephalic setae, opposite to the middle of the amphids, almost quite as long or at the utmost slightly longer. Amphids circular, with the walls unequally thick, 38,8 % of the corresponding diameter. Posterior to the amphids some submedian setae of the same length as those of the subcephalic crown and equally some other setae of the same size on the remainder of the oesophageal region, in the same meridian as the cervical, subcephalic setae. Buccal cavity closed or open, in the latter case with distinct longitudinal ridges, in the former case, slitlike. Nerve ring at 54,5 % of the oesophageal length. Posterior oesophageal bulb distinct, occupying 21,75 % of the oesophageal length. Male with rather long curved spicula with a proximal barb, distal end blunt. Spicula, 1,62 anal diameters long. Gubernaculum ensheathing the spicula, with a distinct dorsal apophysis. Male tail quickly tapering to a long filiform portion. Length of tail 14,7 anal diameters. The female tail is identical in shape. Here the tail index is 19.

Geographical distribution : Mediterranean, Villefranche, Sea of Azov.

Genus ELEUTHEROLAIMUS FILIPJEV, 1922.

The genus *Eleutherolaimus* FILIPJEV is in the possession of a cylindrical buccal cavity and of two crowns of cephalic sense organs of 4 elements each. These 2 crowns may however occasionally be fused, like is the case in the present species, so that we get in this case a crown of 8 cephalic setae. I have not found lateral setae. If these have been broken off and are missing, then the

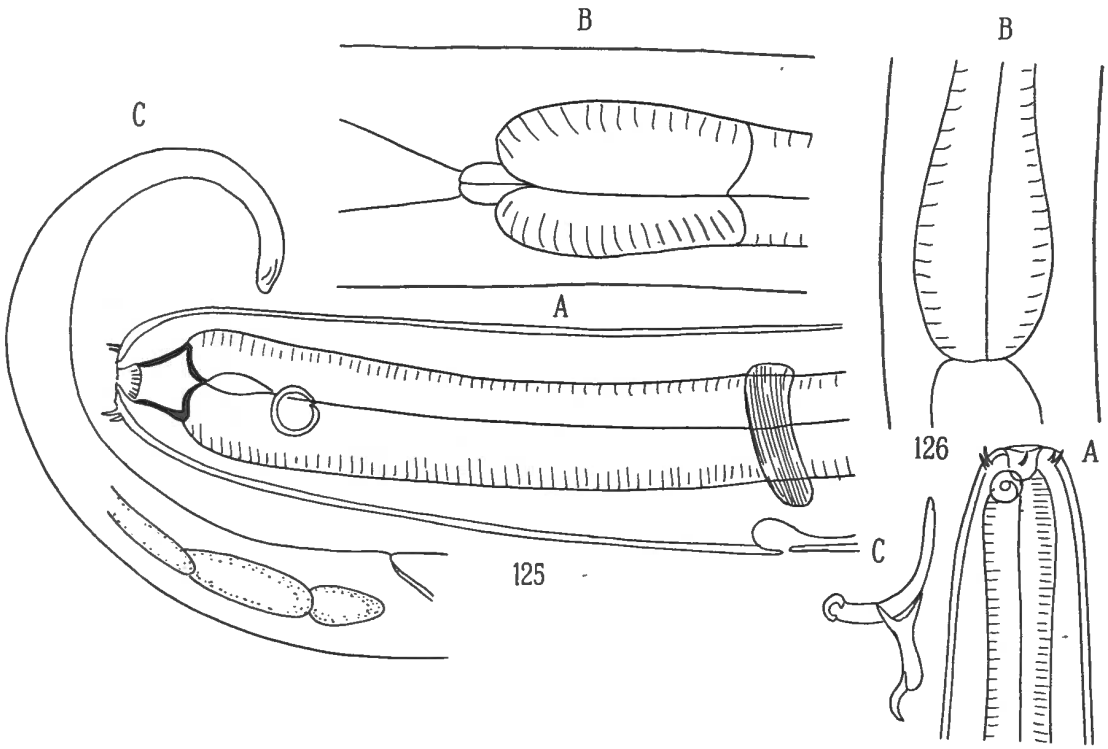

FIG. 125. — *Eleutherolaimus duplicatus* n. sp.
A : Juvenile head end.
B : Base of œsophagus. C : Tail.

FIG. 126. — *Omicronema truncatum* n. sp.
A : Male head end. B : Base of œsophagus.
C : Male genital armature.

crown of cephalic sense organs would be composed of 10 elements and the species in question would fall in the genus *Metalinhomœus*. The species in question shows so great a similarity to *Eleutherolaimus longus* FILIPJEV of the Black Sea, that I was first inclined to take it for the same species. It may however easily be distinguished from the latter species apart from its much greater size, by the markedly longer tail, the shorter cephalic setae. The amphids are of smaller size, but this might be a question of sexual dimorphism.

125. — **Eleutherolaimus duplicatus** n. sp.

(Fig. 125, A-C.)

1 juv. from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

Dimensions :

Length : juv., 5,56 mm; $\alpha = 92{,}6$; $\beta = 21{,}3$; $\gamma = 13$.

$$\frac{0 \quad 260}{50} \quad \frac{M \quad 5160}{60 \quad 40} \quad 5560\ \mu.$$

Head truncate anteriorly, the oral opening surrounded by 6 indistinct labial papillae. I found 8 very minute cephalic setae (confer fig. 125 A), not measuring more than 25 % of the corresponding cephalic diameter. Amphids circular, cryptospiral, 27,3 % of the corresponding diameter, separated from the anterior end by a distance 2,5 times the cephalic diameter. Buccal cavity rather deep, with a number of longitudinal ridges in the vestibulum. Meso- and metastome with cuticularized walls. Oesophagus cylindrical, inconspicuously widened at the posterior end, where we find no prominent bulbus. Cardia short and narrow. Nerve ring at 55 % of the oesophageal length. Excretory pore just in front of the nerve ring, provided with a distinct ampulla. Tail with 3 tail glands, in tandem position. Tail elongate conical, ending blunt, 7,8 anal diameters long.

Genus OMICRONEMA Cobb, 1920.

126. — **Omicronema truncatum** n. sp.

(Fig. 126, A-C.)

1 ♂, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

Unfortunately I have made no notices on the dimensions of the specimen in question. It has several points in common with *Omicronema litorium* Cobb (Cobb, 1920, p. 265), so that I have brought it to that genus, although I am not quite sure that it really belongs to it.

The buccal cavity however is not wide but rather narrow and shallow. The head is truncate at apex. No labial papillae are to be seen, neither are cephalic papillae. The only crown is the crown of the cephalic setae, 10 in number, the longer ones not longer than 26 % of the corresponding cephalic diameter. Walls of the buccal cavity not strengthened.

Amphids circular in outline, with central dot, cryptospiral in structure. Oesophagus cylindrical, with a faint bulb at base. Cuticle smooth, not ringed like in *litorium*.

Male genital armature consisting of a curved spiculum, headed at its proximal end and a gubernaculum, that embraces the spiculum at its lower half and bears itself a dorsal apophysis with curved proximal end. The exact position of this species cannot be given with certainty, although I am inclined to place it in the group of the *Linhomœidæ*.

cavity, embraced by chagrinated cuticularized plates, which in their turn are connected with the oral pit by means of thick and curved cuticular bars. At the lower limit of this portion, just in front of the circular rather large amphids the next crown of setae is observed. Oral pit conical. In the oesophageal region as well as further downwards rather long and fine setae are placed in longitudinal rows. Amphids circular, in reality, like was observed in one of the studied males, cryptospiral, 13,8 % in one, 25,5 % of the corresponding diameter in another of my males. Nerve ring just in front of the middle of

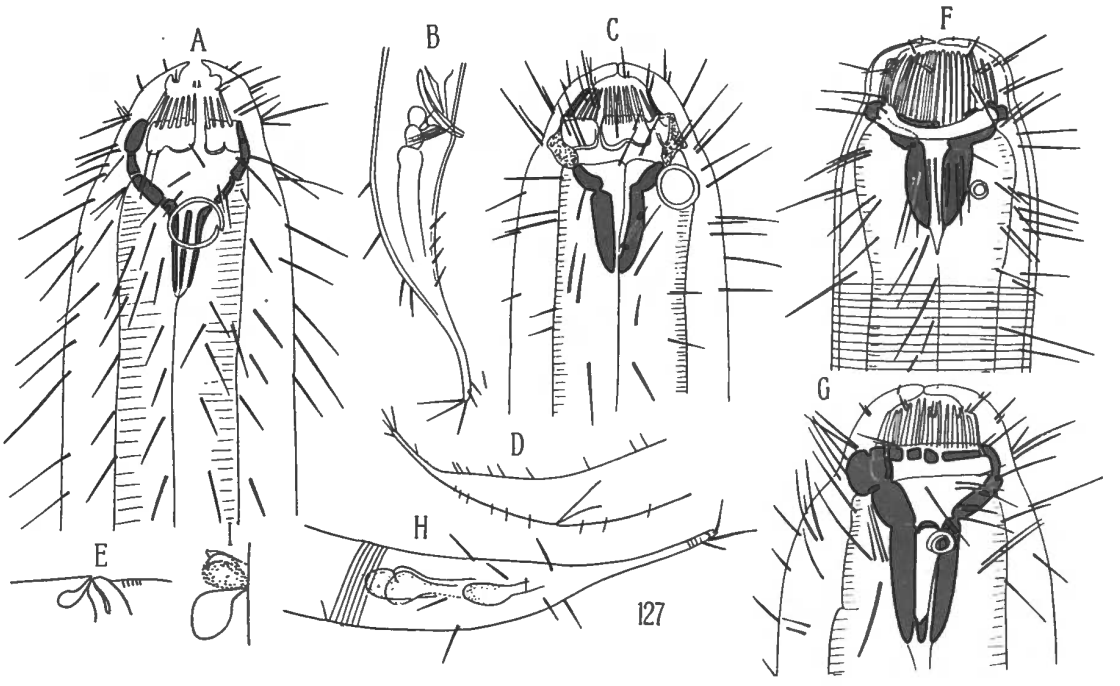

FIG. 127. — *Sphærolaimus dispar* FILIPJEV.
A : Male head. B : Male tail. C : Head. D : Tail. E : Vulva. F G : Female head end H : Female tail. I : Vulva with glands.

the oesophagus. Genital armature : Spicula short, slender, bluntly pointed at both ends, hardly longer than the anal diameter. Gubernaculum building a kind of manchette with a short dorsal apophysis. Tail elongate conical, with a more or less filiform portion occupying not more than 26 % of the tail length, which itself is 3,6 anal diameters long, ending with some rather long setae and bearing a number of setae arranged in longitudinal rows.

In the female, which shows a distinct sexual dimorphism when compared with the male, as well in respect with the structure of the buccal cavity as in respect with the size of the amphids hence the name *dispar*, the setae are likewise arranged into 4 or 5 crowns on the head portion in front of the small

Family **SPHÆROLAIMIDÆ.**

Genus SPHÆROLAIMUS Bastian, 1865.

From this genus till so far *Sphærolaimus gracilis* De Man only was encountered in the Mediterranean (Camargue). Now I can add to it 2 other species, already described by Filipjev (1918-1921) from the Black Sea : *Sphærolaimus dispar* Filipjev and *Sphærolaimus macrocirculus* Filipjev.

127. — **Sphærolaimus dispar** Filipjev, 1918-1921.

Syn. ? *Sphærolaimus striatus* Allgén, 1935.

(Fig. 127, A-I.)

1 ♀, 2 juv. from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

2 ♂♂, 2 ♀♀, 2 juv. from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

1 ♀, from Villefranche, entrance of the road, grey mud. Depth 230 m.

Dimensions :

Length : ♂, 1,768 mm; $\alpha = 21$; $\beta = 4{,}12$; $\gamma = 8{,}85$.

0	48	188	428	M	1568	1768 µ.
24	40	72	80	84	60	

♀ 1, 1,816 mm; $\alpha = 22{,}5$; $\beta = 4{,}35$; $\gamma = 7{,}58$; V. = 70 %.

0	48	416	1276	1576	1816 µ.
24	40	72	80	50	

♀ 2, 2,540 mm; $\alpha = 25{,}5$; $\beta = 4{,}24$; $\gamma = 8{,}5$; V. = 67 %.

0	600	1700	2240	2540 µ.
50	100	100	80	

♀ 3, 2,14 mm; $\alpha = 26{,}7$; $\beta = 3{,}05$; $\gamma = 8{,}9$; V. = 70 %.

0	700	1500	1900	2140 µ.
40	80	80	50	

The specimens in question answer rather good to the descriptions and figures of the same species as given by Filipjev.

Head of the male distinctly more acute than that of the female, conical. Lips fleshy with a crown of 12 labial setae, the components of each pair of setae being very unequal in size, a minute hair is found next to a comparatively long hair, that measures 27,5 % of the corresponding diameter. Second crown of setae, placed in groups, varying from one to three setae each, just opposite the lower end of the second portion of the buccal cavity which is supported interiorly by the well known longitudinal bars, that originate from the cusp-like cuticularized plates from the middle portion of the buccal cavity. Opposite to those cusp-like plates the third crown of long setae is found, similarly arranged in groups of 1-3 setae. Next follows a narrow portion of the buccal

circular or cryptospiral amphids, which measure no more than 10,5 % of the corresponding diameter. Lips with labial setiform papillae, not observed in the male. The oral cavity is, like for instance fig. 127 *a* shows, composed of 5 portions just as in the male sex but the divisions apparently may be telescoped into each other or longitudinally compressed by movements of the parts like for instance from a comparison of figure 127 F and figure 127 G results. Apparently the cuticular ring which embraces the third portion of the buccal cavity may be moved downwards and this gives the varying pictures of the buccal cavity in the female sex. Vulva with vulvar gland. Tail of the female with a filiform portion occupying 25 % of the whole tail length, which is 3,75 anal diameters long.

ALLGÉN's *Sphærolaimus striatus* from the Öresund (1934, p. 133) seems to me to be a synonym of *S. dispar*. The relative length of the oesophagus is somewhat greater than in the specimens from the Mediterranean, but this may stay in connection with the greater length of the specimen from more northern latitude, like this is often the case with nematodes. The spicula are slightly longer as is also the dorsal apophysis of the gubernaculum. The tail bears a smaller number of setae than in my specimens, but these might be broken off or might have been overseen. So I am inclined to keep it for granted, that *S. striatus* ALLGÉN is a synonym of *S. dispar* FILIPJEV.

GEOGRAPHICAL DISTRIBUTION : Black Sea, Mediterranean, Villefranche, Öresund.

128. — **Sphærolaimus macrocirculus** FILIPJEV, 1918-1921.

(Fig. 128, A-F.)

2 ♂♂, 4 ♀♀, 2 juv. from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

1 ♂, from Villefranche, entrance of the road, grey mud. Depth 230 m.

Dimensions :

Length : ♂, 2,018 mm; $\alpha = 31,6$; $\beta = 4,15$; $\gamma = 9,2$.

0	48	168	408	M	1808	
28		60	60	64	56	2018 µ.

♀, 1,816 mm: $\alpha = 22,5$; $\beta = 4,35$; $\gamma = 7,54$; V. = 70 %.

0	48	316	416	1276	1576	
24	40	68	72	80	50	1816 µ.

♀ 2, 1,768 mm; $\alpha = 21$; $\beta = 4,15$; $\gamma = 8,9$.

0	48	188	428	M	1568	
24	40	76	80	84	60	1768 µ.

FILIPJEV has only seen the male of the species, the female, discovered by me, is therefore new to science. There is here too some sexual dimorphism, but this mainly refers to the amphids.

Male with a distinctly tapering dome-shaped head. Lips with 6 labial papillae and 6 short conical labial setae. Opposite to the anterior portion of the rather long chagrinated portion we find a crown, composed of groups of setae, each group consisting of 2-3 setae of considerable length, the longest measuring 56 % of the corresponding diameter. In total I counted 8 groups of setae. At a level with the amphids a crown, composed of pairs of setae of

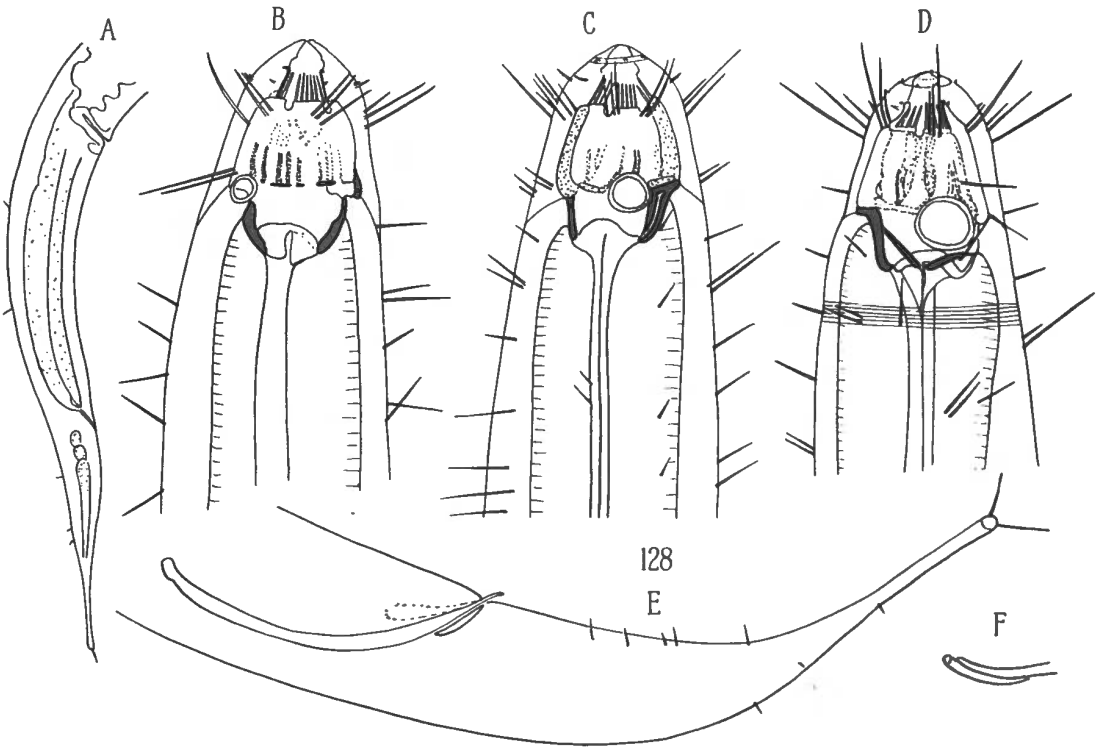

Fig. 128. — *Sphærolaimus macrocirculus* Filipjev.
A : Female tail. B C : Female head ends. D : Male head. E : Male tail.
F : Spiculum and gubernaculum.

unequal size is found. Further the setae are arranged in longitudinal rows. Amphids circular, 22,3-36,5 % of the corresponding body diameter.

Buccal cavity egg-shaped. On a narrow vestibulum a short portion follows, supported by the well known rod-like structures. Follows the chagrinated part, limited at its posterior border by transverse rods, from which longitudinal rows or double rows of dots and spots run halfways on the chagrinated part. The next portion of the buccal cavity is cylindrical and presents at its sides vigourous cuticular bars. At the anterior end of this portion the suture line of the head is encountered.

Genital armature, composed of long and slender spicula and a short, plate-like gubernaculum. Length of spicular chord, 2,33 anal diameters. Male tail with a rather long filiform portion occupying not less than 27,4 % of the whole tail. Length of the same equal to 4,16 anal diameters. Female with distinctly much smaller amphids measuring not more than 15,6 % of the corresponding body diameter. Tail 5,15 anal diameters long. The filiform portion occupies 25 % of the whole tail length.

GEOGRAPHICAL DISTRIBUTION : Black Sea, Mediterranean, Villefranche.

FAMILY **SIPHONOLAIMIDÆ.**

Genus SIPHONOLAIMUS DE MAN, 1893.

129. — **Siphonolaimus weissmanni** (ZUR STRASSEN, 1904).

(Fig. 129, A, B.)

2 ♂♂, from Villefranche, between « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

Dimensions :

Length : ♂, 2,292 mm; $\alpha = 113$; $\beta = 23$; $\gamma = 72$.

$$\frac{0 \quad 100 \quad M \quad 2260}{4 \quad 16 \qquad 20} \quad 2292\ \mu.$$

Body tapering distinctly anteriorly. Head conical with a labial crown of 6 setae, the lateral setae being papilliform and unpaired, whereas the dorsal and ventral setae are paired, the longer ones measuring 44,2 % of the corresponding diameter. A second crown of conical setae is found halfways between the anterior border of the head and the amphids. Amphids circular, 36,5 % of the corresponding diameter. Buccal cavity lacking, a siphon-shaped spear fills up the oesophageal cylinder. Oesophagus ending with an elongate bulb which occupies 36,5 % of the oesophageal length. Tail short cylindrical, curved ventrally, ending bluntly, 1,76 times as long as the anal diameter. Spicula extremely long and slender, not less than 4,25 anal diameters long. Gubernaculum forming a manchette. In the ventral curve of the tail one finds 14 praeanal papillae.

GEOGRAPHICAL DISTRIBUTION : Naples, Villefranche, Mediterranean.

Family **MONHYSTERIDÆ.**

Genus PARAMONHYSTERA Steiner, 1916.

130. — **Paramonhystera paranormandica** (Micoletzky, 1922).

(Fig. 130, A-E.)

2 ♂♂, 1 ♀, 1 juv. from Villefranche « Baie de Lilong ». Depth 5 m.

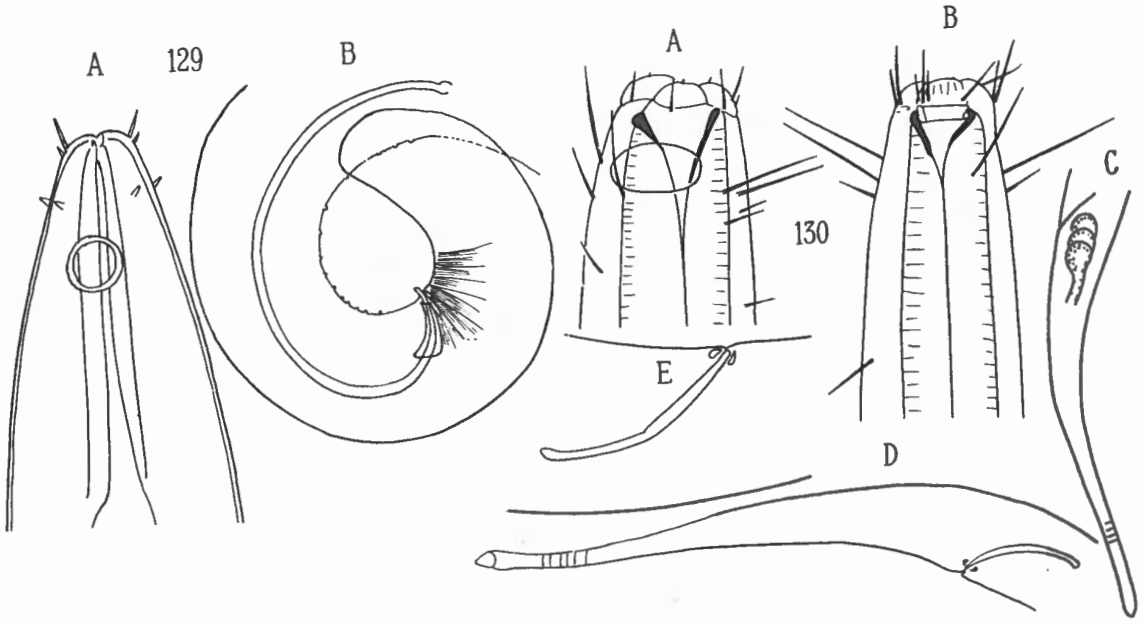

Fig. 129. — *Siphonolaimus weissmanni* (Zur Strassen).
A : Male head. B : Male tail.

Fig. 130. — *Paramonhystera paranormandica* (Micoletzky).
A : Female head. B : Male head. C : Female tail. D : Male tail.
E : Male genital armature.

Dimensions :

Length : ♂, 1,432 mm; $\alpha = 22{,}8$; $\beta = 4{,}5$; $\gamma = 7{,}5$.

0	320	M	1260	1432 µ.
24	48	64	32	

1 ♀ : 1,32 mm; $\alpha = 28{,}2$; $\beta = 4{,}25$; $\gamma = 6{,}8$; V. = 65 %.

0	140	320	880	1160	1320 µ.
24		40	48	28	

Juv., 1,028 mm; $\alpha = 21{,}5$; $\beta = 3{,}05$; $\gamma = 8{,}1$.

0	140	320	900	1028 µ.
20		48	32	

In general my specimens answered rather good to the description given from the species in question by Micoletzky. So I give here only a picture of

the head end, the male genital armature and the female tail. The large transversely placed, elliptical amphids, that measure 62,5 % of the corresponding body diameter, the 12 cephalic setae, the longitudinal striation of the vestibulum oris, the strongly cuticularized metastome as well as the long cervical setae of the head end are typical features. Unfortunately MICOLETZKY has not given a picture of the tail, which gap I fill out here. Such a female tail measured 7,35 anal diameters. The male genital armature was identical to that found and described by MICOLETZKY. Spicula slender, rod-shaped, almost the same width throughout, hardly headed at their proximal end, bluntly pointed distally, 1,4 anal diameters long. Gubernaculum minute, inconspicuous.

GEOGRAPHICAL DISTRIBUTION : Mediterranean, Adria, Rovigno, Ombla Bay, Bocche di Cattaro, Napoli, Ischia, Sea of Marmara, Suez, Alexandria. One of the species most frequently encountered in the Mediterranean.

131. — **Paramonhystera elliptica** FILIPJEV, 1918.

(Fig. 131, A, B.)

2 ♀♀, 1 juv. from Villefranche, off the « Vieux Villefranche », black mud and organic detritus. Depth 20 m.

Dimensions :

Length : ♀, 2,4 mm; $\alpha = 17{,}1$; $\beta = »$; $\gamma = 9{,}1$; V. = 61,6 %.

FILIPJEV'S formula :

$$\frac{0 \quad 480 \quad 1480 \quad 2140}{40 \quad 80 \quad 140 \quad 60} \quad 2400\ \mu.$$

Although my specimens were distinctly less slender $\alpha = 17{,}1$ against 32 in FILIPJEV's female (FILIPJEV, 1918-1921, p. 280), my specimens have so many points in common with FILIPJEV's species, that I do not hesitate to bring them to the species in question. Head faintly demarcated. Lips slightly swollen, 12 cephalic setae, arranged in pairs. The longer setae of each couple measures 45 % of the corresponding body diameter, against 47 % in FILIPJEV's female. Shorter setae of each couple not longer than 25 % of the corresponding cephalic diameter. Labial papillae conical, distinct. Buccal cavity conical, not very strongly cuticularized. Amphids elliptical, very large, occupying almost the whole lateral side of the body. Just behind the amphids we find a number of very long and slender cervical setae, each almost 45 % of the corresponding body diameter long. Tail slender, elongate, 4,4 anal diameters long, whereas the tail measured in FILIPJEV's specimens 4 anal diameter in the female sex.

GEOGRAPHICAL DISTRIBUTION : Black Sea, Krim, Kaukasus, Mediterranean, Villefranche.

132. — **Paramonhystera micramphis** n. sp.

(Fig. 132, A-D.)

2 ♀♀, 1 juv. from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

Dimensions :

Length : ♀, 1,96 mm; $\alpha = 49$; $\beta = 6,52$; $\gamma = 8,6$; V. = 56 %.

Filipjev's formula :

$$\frac{0 \quad 160 \quad 300 \quad 1100 \quad 1800}{28 \qquad 40 \qquad 36} \quad 1960\ \mu.$$

Length juvenile : 1,528 mm; $\alpha = 38,2$; $\beta = 4,8$; $\gamma = 7,35$.

Filipjev's formula :

$$\frac{0 \quad 140 \quad 320 \qquad 1320}{34 \qquad 36 \quad 40 \quad 32} \quad 1528\ \mu.$$

The species in question is more or less intermediate between *Paramonhystera elliptica* Filipjev and *P. paranormandica* Micoletzky. It is easily distinguished from both by the distinctly smaller amphids, which are however elliptical in outline and by the less conspicuous cervical setae.

Head truncate to rounded anteriorly with low lips, each bearing a rather minute labial papilla. Cephalic setae apparently likewise 12 in number, arranged in couples, the longer partners measuring 53 % of the corresponding cephalic diameter. The amphids measure 41 % of the corresponding body diameter. They are placed somewhat more backwards, when compared with their position in *paranormandica*, opposite to the oral bottom. At a level with the amphids some cervical setae, not measuring more than 37 % of the corresponding body width. Buccal cavity with a conical metastome, the latter separated from the shallow mesostome by a transverse culticular ring, like this is the case in *paranormandica*. The cuticular ring however is less vigorous than in *paranormandica*. Tail elongate cylindroconical, gradually tapering towards the blunt tip, length of the tail about 6,5 anal diameters.

Genus THERISTUS Bastian, 1865.

133. — **Theristus mæoticus** Filipjev, 1922.

(Fig. 133, A-C.)

1 ♂, 1 ♀, 1 juv. from Villefranche, off the Station, coarse sand under vegetation of *Posidonia*. Depth 15 m.

Dimensions :

Length : ♂, 0,96 mm; $\alpha = 27$; $\beta = 5,3$; $\gamma = 6,05$.

$$\frac{0 \quad 180 \quad M \quad 800}{16 \quad 32 \quad 36 \quad 30} \quad 960\ \mu.$$

Although the specimen measured by me was distinctly smaller than FILIPJEV's type male of *Theristus mœoticus* (FILIPJEV's males varied in length between 1.300 and 1.400) they agree rather well with that species in general structure. So I have felt justified to bring my specimens to the said species.

Head distinctly demarcated, but not strongly swollen. I counted 10 cephalic setae, the longer ones measuring 83 %, the smaller ones measuring 47 % of

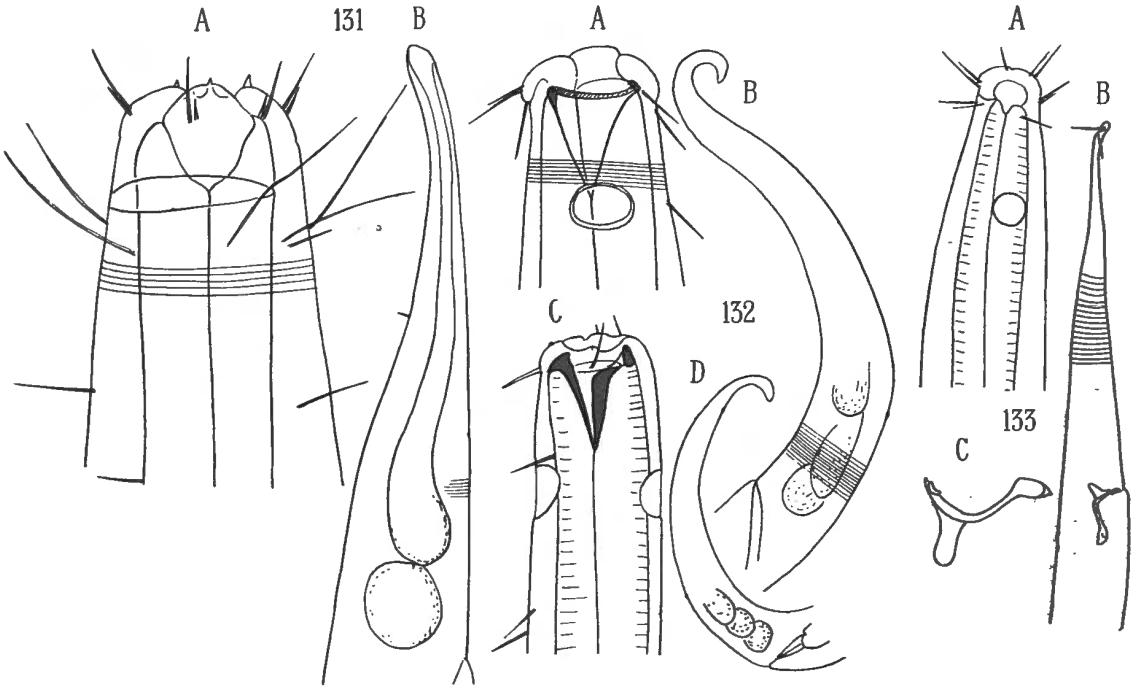

FIG. 131. — *Paramonhystera elliptica* FILIPJEV.
A : Female head. B : Female tail.

FIG. 132. — *Paramonhystera micramphis* n. sp.
A : Female head. B : Female tail.
C : Juvenile head. D : Juvenile tail.

FIG. 133. — *Theristus mœoticus* FILIPJEV.
A : Male head. B : Male tail.
C : Spiculum and gubernaculum.

the corresponding cephalic diameter. Amphids circular, measuring 31 % of the corresponding body diameter, and on a distance equal to 2 times the cephalic diameter from the anterior end.

Genital armature : Spicula curved, rectangular, swollen at their proximal, pointed at their distal end; the chord as long as 1 anal diameter. Gubernaculum with distinct dorsal apophysis. Tail, 5,6 anal diameters long, gradually tapering to the more or less effilated tip, which bears some long setae.

GEOGRAPHICAL DISTRIBUTION : Sea of Azov, Mediterranean, Villefranche.

134. — Theristus tenuispiculum Ditlevsen, 1919.

(Fig. 134, A, B.)

1 ♂, from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.
1 ♂, 1 juv. from Villefranche, entrance of the road, grey mud.

Dimensions :

Length : ♂ 1, 0,956 mm; $\alpha = 19{,}8$; $\beta = 4{,}6$; $\gamma = 7{,}45$.

$$\frac{0 \quad 100 \quad 208 \quad M \quad 828}{16 \qquad 44 \quad 48 \quad 32} \quad 956\ \mu,$$

♂ 2, 1,32 mm; $\alpha = 25{,}3$; $\beta = 5{,}88$; $\gamma = 7{,}49$.

$$\frac{0 \quad 148 \quad 160 \quad 224 \quad M \quad 1144}{16 \qquad\qquad 50 \quad 52 \quad 40} \quad 1320\ \mu.$$

Head caplike, much narrower than the rest of the body. Cephalic setae, 6 in number, not longer than 30 % of the corresponding diameter. Amphids 23 % of the body diameter, at 136 % of the cephalic diameter from the anterior head end. Cuticula distinctly annulated.

Spicula rectangular, with a long perpendicular portion, not swollen at their proximal end; tip of spicula blunt. Gubernaculum a tubular manchette. Length of spicular chord 1,18 anal diameters. Gubernaculum measuring only 66 % of the anal diameter. Tail conical at its base, tapering to a rather long filiform portion, which occupies 31,4 % of the tail, which itself is 4,22 anal diameters long.

Geographical distribution : North Sea and Baltic, Mediterranean.

Discussion : Although the specimens from the Mediterranean differ in some points from the typical specimens from the North Sea, so for instance in the fact, that the spicula do not possess the swollen head ends found in specimens from the Belgian Coast, they are for the rest so similar to the latter that I have not hesitated to bring them to the same species. The present specimens show likewise strong resemblance with *Monhystera rotundicapitata* Filipjev from the Black Sea, but in that species we encounter a much shorter, conical, non-effilate tail.

135. — **Theristus normandicus** (De Man, 1890).

(Fig. 135, A-F.)

3 ♂♂, 6 ♀♀, 6 juv. from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus. Depth 20 m.

1 ♀, 1 juv. from Villefranche, off the « Pointe de la Gavinette », grey mud. Depth 80 m.

Dimensions :

Length : ♂, 1,472 mm; $\alpha = 34{,}6$; $\beta = 5{,}68$; $\gamma = 6{,}5$.

0	120	260	M	1244	1472 µ.
21		41,5		25	

♀, 1,7 mm; $\alpha = 26{,}5$; $\beta = 5{,}9$; $\gamma = 6{,}55$; V. = 58 %.

0	140	288	988	1440	1700 µ.
22		48	64	32	

The dimensions of male and female fall in the range of variation of the species. In structural features these specimens quite agree with those from more northern latitudes. I may only point to the fact, that in the female I found a postvulvar sac. The male quite agrees with those formerly studied by me (compare the figures 135 A and F).

Geographical distribution : North and Baltic Seas, Atlantic Coast of Europe, Mediterranean. Allgén (1941, p. 292) mentions to have found the same species near Bandirma, Sea of Marmara. His female was distinctly smaller than the present specimens. Length not more than 0,90 mm, whereas the vulva was situated at 69,7 % of the total length. He further found it in Banyuls.

136. — **Theristus longicaudatus** Filipjev, 1922.

(Fig. 136, A-E.)

1 ♀, from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

2 ♂♂, from Villefranche, off the « Vieux Villefranche », black mud and organic detritus. Depth 20 m.

Dimensions :

Length : ♂, 1,328 mm; $\alpha = 33{,}2$; $\beta = 5{,}3$; $\gamma = 6{,}6$.

0	120	248	M	1128	1328 µ.
16		36	40	28	

♀, 1,18 mm; $\alpha = 29{,}5$; $\beta = 4{,}5$; $\gamma = 5$; V. = 64 %.

0	260	760	944	1180 µ.
12	36	40	28	

In general my specimens agree rather well with those of Filipjev.

Head rounded anteriorly with distinct lips, crowned with minute, yet very distinct labial papillae. There are 12 subequal cephalic setae, measuring in the male about 57 % of the corresponding cephalic diameter. Cuticle distinctly

striated transversely. Buccal cavity wide, with the entrance of the oesophagus a thickened cuticular lining, which was not distinctly to be seen in the female from « l'Anse passable ».

Genital armature consisting of spicula, distinctly swollen at their proximal end. These spicula are rectangular. Length of their chord, 1,4 anal diameters.

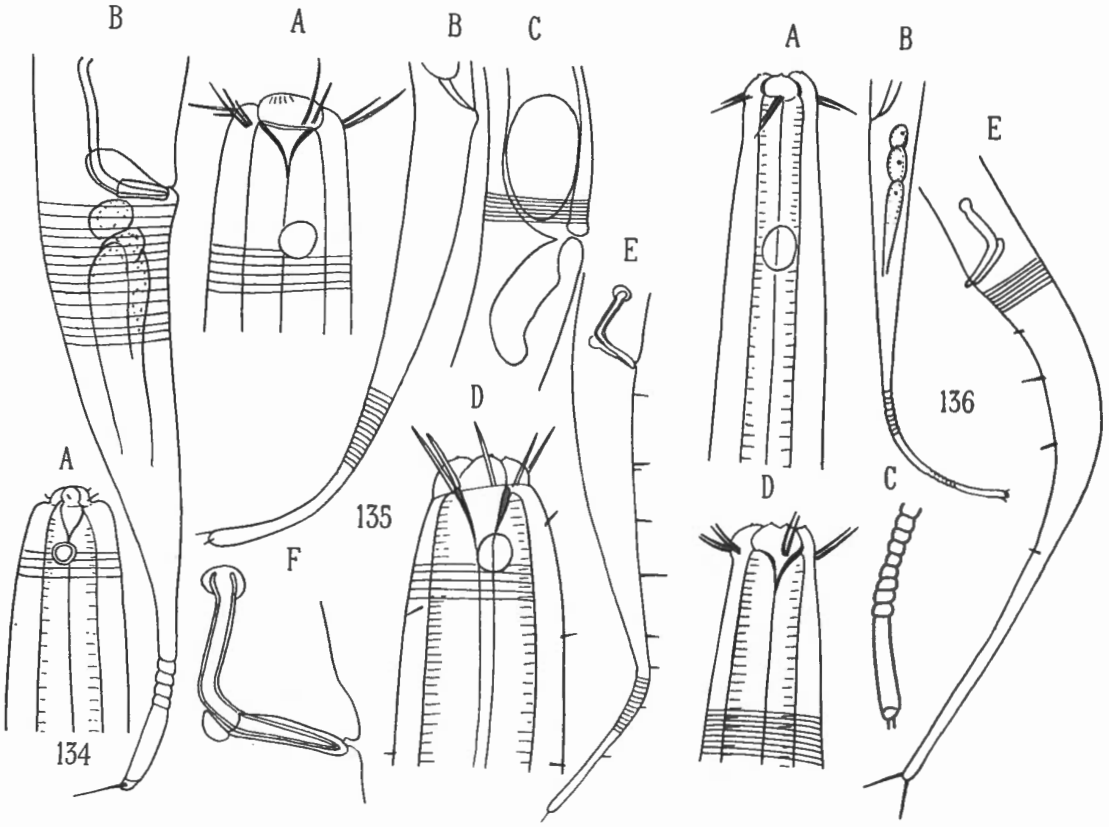

Fig. 134. — *Theristus tenuispiculum* Ditlevsen.
A : Male head. B : Male tail.

Fig. 135. — *Theristus normandicus* (De Man).
A : Female head.
B : Female tail. C : Vulva. D : Male head.
E : Male tail. F : Male genital armature.

Fig. 136. — *Theristus longicaudatus* Filipjev.
A : Female head end.
B : Female tail. C : Tip of the same sort of tail.
D : Male head end. E : Male tail.

Distal end of spicula blunt. Gubernaculum short, without dorsal apophysis, building a simple sliding gutter for the spicula. Tail elongate conical with a rather long cylindrical filiform portion, occupying no less than 45 % of the whole tail length. Length of tail equal to 7 anal diameters. At the ventral side of the male tail some setae were observed.

The female presented, if the not very clear relations are correctly understood, somewhat elongate amphids, their diameter measured 33 % of the

corresponding body diameter, their anterior border was separated from the anterior body end by 2,1 cephalic diameters. Vulva with large vulvar glands of which the caudal is distinctly larger than the anterior. Length of tail equal to 9,3 anal diameters.

GEOGRAPHICAL DISTRIBUTION : Black Sea, Anatolia, Mediterranean.

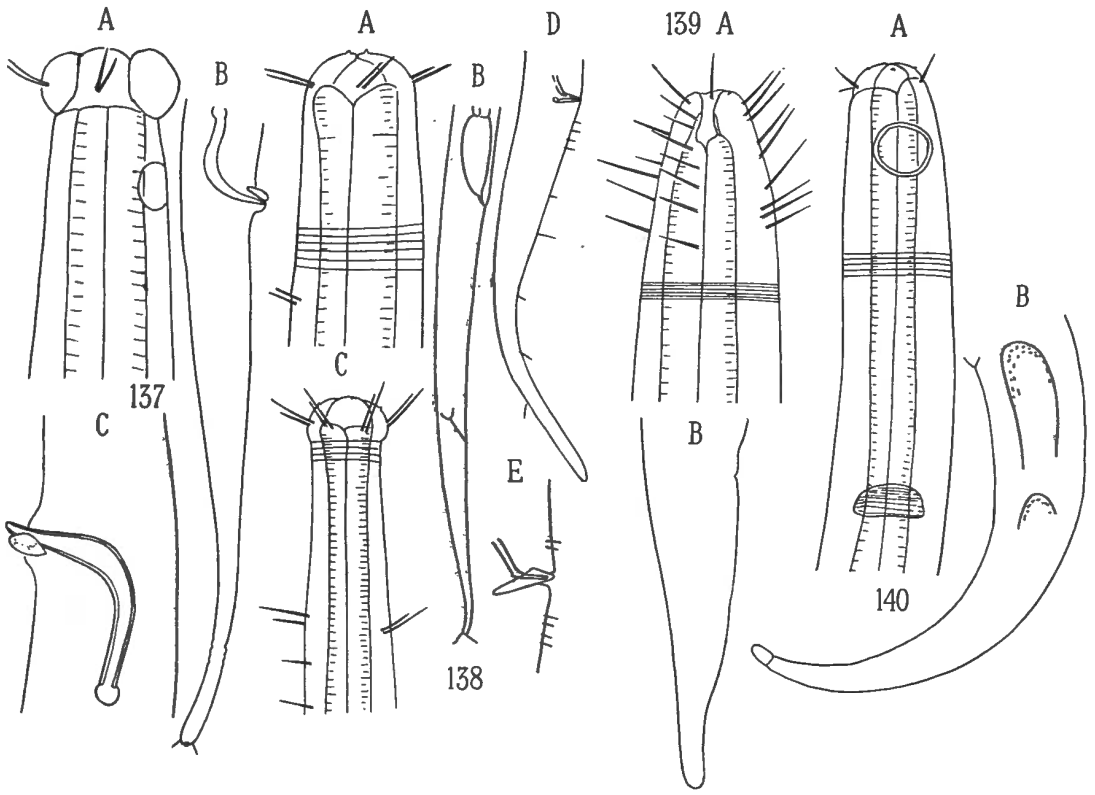

FIG. 137. — *Theristus calcaneus* n. sp.
A : Male head end. B : Male tail. C : Male genital armature.

FIG. 138. — *Theristus angulatus* n. sp.
A : Female head. B : Female tail end.
C : Male head end. D : Male tail.
E : Male genital armature.

FIG. 139. — *Theristus stichotricha* n. sp.
A : Female head end. B : Tail.

FIG. 140. — *Theristus obtusicephalus* n. sp.
A : Female head. B : Tail.

137. — Theristus calcaneus n. sp.

(Fig. 137, A-C.)

1 ♂, from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus. Depth 20 m.

Dimensions :

Length : ♂, 1,352 mm; $\alpha = 41$; $\beta = 5,85$; $\gamma = 6,15$.

$$\frac{0 \quad 232 \quad M \quad 1132}{21 \qquad 33,5} \quad 1352\ \mu.$$

This species, closely related to *Theristus oxyuroides* Schuurmans Stekhoven from the Zuidersea Holland, is however twice as big and crowned with distinctly smaller cephalic setae.

Head swollen, rather large. Cephalic setae comparatively small, 31,5 % of the corresponding diameter. The partners of each couple subequal. Amphids circular, measuring 33 % of the corresponding body diameter. Genital armature : Spicula rectangular, their chord 1,21 anal diameters long, proximal end swollen, distal end bluntly pointed. Gubernaculum small, in the shape of a calcaneus. Tail elongate conical with a distinct filiform portion, occupying about 44,5 % of the whole tail length. Tip of tail with some short setae. Total length of tail 6,38 anal diameters long.

138. — **Theristus angulatus** n. sp.

(Fig. 138, A-E.)

1 ♂, 1 ♀, from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus. Depth 3 m.

This species is closely allied to *Theristus calceolatus* De Coninck and Schuurmans Stekhoven and shows likewise great resemblance to *Th. oxycerca* (De Man). The spicula of *Th. oxycerca* however are distinctly more slender than those of *Th. angulatus* and of other texture. The resemblance with *Th. calceolatus* is still greater but the present form possesses shorter cephalic setae, a comparatively longer filiform tail portion and distinctly longer postanal setae than in *calceolatus,* to which I was inclined to bring the species at first. Thirdly the pilosity of the anterior end in my species is denser than in *calceolatus,* where we find no pilosity at the cervical end.

Dimensions :

Length : ♂, 0,988 mm; $\alpha = 32,8$; $\beta = 4,95$; $\gamma = 6,7$.

$$\frac{0 \quad 200 \quad M \quad 840}{16 \quad 26 \quad 30 \quad 24} \quad 988\ \mu.$$

♀, 1,28 mm; $\alpha = 32$; $\beta = 4,5$; $\gamma = 7,1$; V. = 69 %.

$$\frac{0 \quad 280 \quad 880 \quad 1100}{20 \quad 36 \quad 30 \quad 28} \quad 128\ \mu.$$

Head end slightly swollen with 6 distinct lips, crowned with distinct labial papillae. Cephalic setae 12 in number (in 6 pairs), the longer partners measuring 64 % of the corresponding cephalic diameter, the shorter partners 50 % of that same diameter. Buccal cavity short and wide. Amphids not seen. Cervical pilosity distinct. Genital armature : Spicula short, angular, hardly widened at their proximal end. Spicular chord measuring 66 % of the anal diameter. Gubernaculum embracing the spicula at their distal pointed end. There is an oblique dorsal apophysis. Just behind the anal opening we find

a row of 4 setae, whereas 2 short setae are placed in front of the cloaca. Further downwards the tail bears a subventral row of setae. Tail elongated conical at base, 7,4 anal diameters long. The filiform portion occupies 26,4 % of the whole tail.

The female resembles very much that of *Th. normandicus*, is however in the possession of a more effilate tail of setae on the cervical portion of the body and has no postuterine sac. Length of female tail equal to 6,7 anal diameters. Cephalic setae subequal; the longer partners measure 50 %, the shorter ones 40 % of the cephalic diameter.

139. — **Theristus stichotricha** n. sp.

(Fig. 139, A, B.)

1 ♂, from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

Dimensions :

Length : ♀, 1,740 mm; $\alpha = 34{,}8$; $\beta = 8{,}7$; $\gamma = 14{,}5$; V. = 49,4 %.

$$\frac{0 \quad 200 \quad 860 \quad 1620}{20 \quad 50 \quad 50 \quad 30} \quad 1740\ \mu.$$

The female in question is in rather bad condition, sor for instance I have not observed the amphids. As for the rest it is caracterized by the presence of longitudinal rows of setae in the cephalic region. Lips not sharply demarcated. Head flattened in front, with indistinct labial papillae. There are only 6 cephalic setae, measuring 76,5 % of the corresponding diameter. Cuticular striation very fine and dense. Tail short, 3,1 anal diameters long, cylindrical, on its distal third narrowed to a nipple-shaped tip.

The species belongs apparently to the same group as *Th. horridus* STEINER.

140. — **Theristus obtusicephalus** n. sp.

(Fig. 140, A, B.)

1 ♀, from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

Dimensions :

Length : ♂, 0,928 mm; $\alpha = 25{,}7$; $\beta = 6{,}1$; $\gamma = 7{,}4$; V. = 59 %.

$$\frac{0 \quad 142 \quad 532 \quad 804}{14 \quad 28 \quad 36 \quad 24} \quad 928\ \mu.$$

Head bluntly rounded anteriorly, with indistinctly demarcated lips, bearing each a minute labial papilla. Cephalic setae, 6 in number, measuring 35 % of the cephalic diameter. Head end distinctly demarcated against the remainder of the body. Oral cavity undeep. Amphids large circular, measuring not less than 61,5 % of the corresponding diameter, situated not quite 1 cephalic dia-

meter from the anterior head end. Cuticle faintly striated transversely. Tail elongate conical, with 3 caudal glands in tandem position. Tail 5 anal diameters long.

The species shows resemblance with *Monhystera rotundicapitata* Filipjev but shows the cuticular striae proper to *Theristus*, is in the possession of longer cephalic setae and larger amphids.

Genus METADESMOLAIMUS Schuurmans Stekhoven, 1935.

In 1935 Schuurmans Stekhoven (1935, p. 33) created the genus *Metadesmolaimus* for a new species from the Belgian Coast, which although resembling in several respects to *Theristus* could be easily distinguished from the latter by the structure of its buccal cavity. In the material from Villefranche I have encountered another representant of that genus, which I propose to call *Metadesmolaimus coronatus*, whereas *Cobbia sabulicola* Filipjev should likewise be reckoned to this genus. The genus *Cobbia* is characterized by the presence of three buccal teeth, like they are found in *Cobbia triodonta* Filipjev, which teeth the species *Cobbia sabulicola* misses. In the figure Filipjev has given from that species (fig. 63 *a*) no such teeth are to be observed, although the author mentions its presence in the text. So I feel sure that that species should be placed in the proximity of both *Metadesmolaimus labiosetosus* S. S. and *Metadesmolaimus coronatus* S. S. Comparing the figures, that stay to my disposition I come to the conclusion that *Metadesmolaimus* is a Monhysterid and not a Linhomoeid.

From *Metadesmolaimus sabulicola* the present species may be easily distinguished by its more prominent labial setae, its distinctly longer flagellum of the tail and its comparatively longer oesophagus.

141. — **Metadesmolaimus coronatus** n. sp.

(Fig. 141, A-E.)

1 ♂, 1 ♀, from Villefranche, off the Station, coarse sand under vegetation of *Posidonia*. Depth 15 m.

Dimensions :

Length : ♂, 2,22 mm; $\alpha = 55{,}5$; $\beta = 5{,}55$; $\gamma = 6{,}93$.

$$\frac{0 \quad 400 \quad M \quad 1900}{24 \quad 40 \quad 40 \quad 36} \quad 2220\ \mu.$$

♀, 2,38 mm; $\alpha = 49{,}5$; $\beta = 6{,}1$; $\gamma = 7$; V. = 58,5 %.

$$\frac{0 \quad 52 \quad 392 \quad 1392 \quad 2040}{28 \quad\quad 44 \quad 48 \quad 36} \quad 2380\ \mu.$$

Male : Head distinctly set off from the remainder of the body. Lips prominent with longitudinal striation of the vestibulum oris; each lip bears

prominent labial setae, measuring 41 % of the corresponding diameter. There is a crown of 10 cephalic setae, of which the lateral setae are single, whereas the submedian setae are paired, the partners of each couple being unequal in size. Lateral setae measuring 88 % of the cephalic diameter, the longer submedian setae measure 112 % of the cephalic diameter, whereas their shorter

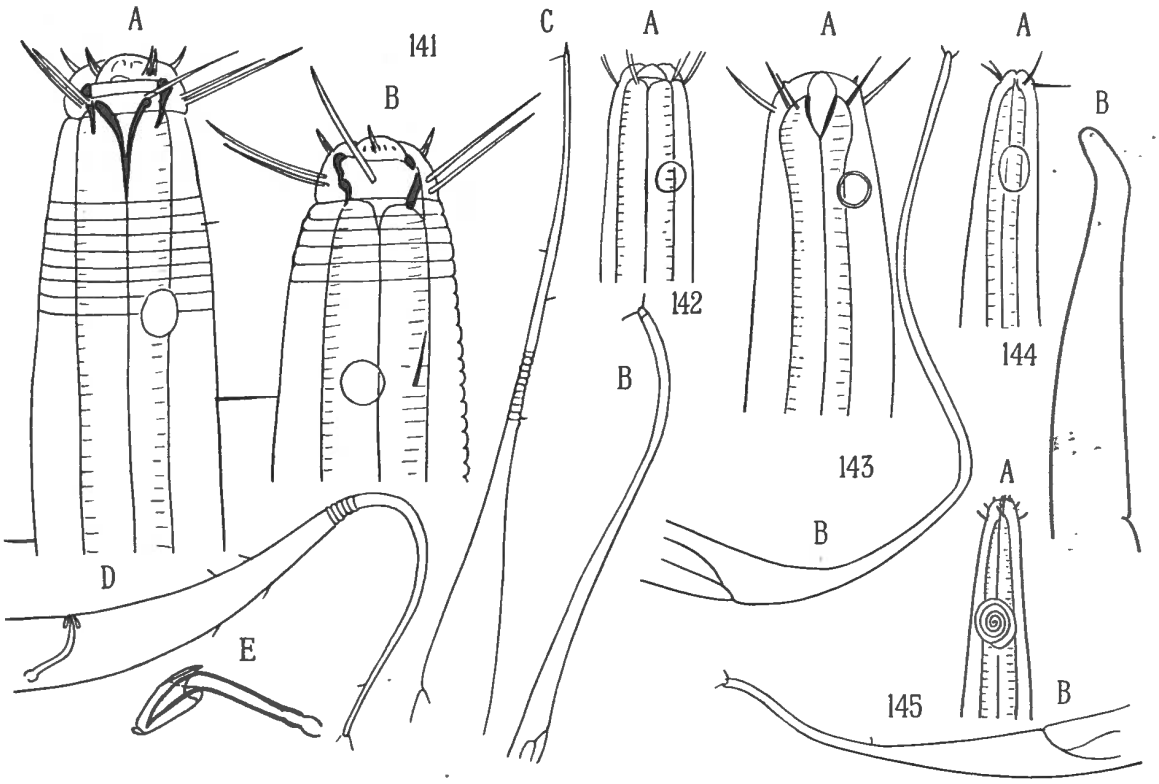

FIG. 141. — *Metadesmolaimus coronatus* n. sp.
A : Female head. B : Male head. C : Female tail. D : Male tail.
E : Male genital armature.

FIG. 142. — *Monhystera gracilicauda* n. sp.
A : Juvenile head. B : Tail.

FIG. 143. — *Monhystera heterolaima* n. sp.
A : Female head. B : Tail.

FIG. 144. — *Monhystera tenuis* n. sp.
A : Female head end. B : Tail.

FIG. 145. — *Linhomœlla tenuicauda* n. sp.
A : Female head end. B : Tail.

partners measure 84 % of the same diameter. Cuticle coarsely striated transversely. Amphids 21 % of the corresponding body diameter, circular, 1,8 cephalic diameters from the anterior head end. Buccal cavity complicate, composed of a rather wide prostome or vestibulum, a small mesostome, embraced by the cuticular ring of the cephalic capsule, which is firmly anchored in the oesophageal corpus by means of longitudinal rods. Metastome conical, lined with thick cuticularisations. Spiculum swollen at its proximal end, pointed at its

distal end, which is surrounded at all sides by the sheath of the gubernaculum, which does not possess a dorsal prolongation. Tail of the male with some setae as well along the ventral as along the dorsal side. Flagellum occupying 38,6 % of the whole tail which measures 8,5 anal diameters.

In the female we find a similar distribution of the cephalic setae. Here the longer submedian hairs measure 121 %, the shorter 100 % of the corresponding diameter, whereas the lateral hairs measure 106 % of that diameter. Next to the amphids I find a short seta. The amphids themselves circular in outline, measure 24 % of the corresponding diameter and are separated from the anterior end by a distance equal to 1,8 cephalic diameters. Female tail conical in the beginning, becoming soon filiform. The flagellum occupies 71 % of the whole tail which is 9,6 anal diameters long.

Genus MONHYSTERA Bastian, 1865,

142. — **Monhystera gracilicauda** n. sp.

(Fig. 142, A, B.)

2 juv. from Villefranche, farther end of the « Port de la Darse », black mud and organic detritus.

Dimensions :

Length : juv. 1, 1,08 mm; $\alpha = 54$; $\beta = 7{,}7$; $\gamma = 4{,}5$.

$$\frac{0 \quad 140 \quad 840}{16 \quad 20 \quad 16} \quad 1080$$

Juv. 2, 1,726 mm; $\alpha = 58$; $\beta = 8{,}2$; $\gamma = 5{,}8$.

$$\frac{0 \quad 146 \quad 1056}{16 \quad 22 \quad 20} \quad 1276\ \mu.$$

A typical long-tailed species, resembling *M. filicaudata* Allgén from which it may be distinguished by the shorter cephalic setae which are almost equal, whereas they are unequal in size in *filicaudata*, the absence of cervical setae and the longer tail. The species in question resembles likewise to *Theristus longicaudatus* Filipjev, but misses the cuticular ringing and possesses a more slender tail.

Head rounded anteriorly, with distinct lips, surrounding a very shallow buccal capsule. Cephalic setae subequal, 12 in number, measuring 61 % of the corresponding diameter. Amphids circular, on a distance equal to 1,5 cephalic diameters from the anterior head end. Diameter of the same equal to 32,8 % of the corresponding diameter. Tail very long, varying in length between 15 and 11 anal diameters, conical at base, soon narrowed to a long flagellum, which occupies at least 75 % of the whole tail length.

143. — **Monhystera heterolaima** n. sp.

(Fig. 143, A, B.)

3 ♀ ♀. from Villefranche, off the « Vieux Villefranche », black mud and organic detritus. Depth 20 m.

Dimensions :

Length : ♀, 1,512 mm; $\alpha = 42$; $\beta = 10{,}8$; $\gamma = 4{,}3$; V. = 50,5 %.

$$\frac{0 \quad 140 \quad 760 \quad 1160}{16 \quad 36 \quad 36 \quad 24} \quad 1512\ \mu.$$

The species in question is characterized by the possession of a long effilate tail, of comparatively long cephalic setae and by the peculiar cuticularization of the oral pit.

Head rounded anteriorly.. Lips not demarcated distinctly, beset with prominent setiform labial papillae. I have counted 10 cephalic setae, of which the lateral remain unpaired. These measure 64 % of the corresponding diameter, whereas the longer partners of the submedian pairs are quite as long. The shorter submedian setae measure 44 % of the same diameter. Amphids circular, 31,3 % of the corresponding diameter, only little more than 1 cephalic diameter from the anterior head end. Vestibulum not particularly strengthened, oral pit with strong cuticularization, ressembling the structure of the oral cavity in *M. conica* Filipjev.

Tail very long with a distinct rather broad conical portion, quickly tapering to the long flagellum, which occupies 80 % of the whole tail length. Length of tail 14,6 anal diameters.

144. — **Monhystera tenuis** n. sp.

(Fig. 144, A, B.)

1 ♀, from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

Dimensions :

Length : ♀, 1,356 mm; $\alpha = 48{,}4$; $\beta = 8{,}4$; $\gamma = 17$; V. = 52,2 %.

$$\frac{0 \quad 160 \quad 708 \quad 1276}{8 \quad 20 \quad 28 \quad 20} \quad 1356\ \mu.$$

The true systematic position of the present species is not quite certain. It is in the possession of an inconspicuous buccal slit only. For the rest it mostly resembles a *Monhystera* species, so that I feel urged be it with some hesitation to bring it to that genus.

Head end slightly attenuated, without distinct lips. Six cephalic setae, 1,2 cephalic diameters long. Buccal cavity inconspicuous. Amphids slightly

elongate, not quite circular, on 2 cephalic diameters from the anterior end, their diameter 53 % of the corresponding body diameter. Tail conical, ending bluntly. Length of the tail equal to 5,65 anal diameters.

Addendum : In the material from Villefranche I met with another species of *Monhystera* in the sample collected entre le Lazareth et l'Anse passable. This species could not be identified, because it was in a very bad state of preservation.

SPECIES OF UNKNOWN AFFINITY.

The following species I have provisionally brought to the genus *Linhomœlla,* although it misses one of the typical features of that genus, the shorter cephalic setae not differentiated to little cups like this was the case in *Linhomœlla exilis* Cobb. The amphids circular in outline are distinctly spiral, which is often the case in the Linhomoeidae. If the species belongs to the Linhomoeidae or to the Monhysteridae like I suppose it does, can only be stated with certainty if more ample material is at hand. The spiral amphids remind me those found in *Ægialoalaimus.* In that case it should again get another systematic position.

Genus LINHOMŒLLA Cobb, 1920.

145. — **Linhomœlla tenuicauda** n. sp.

(Fig 145, A, B.)

1 ♀, from Villefranche, between the « Lazareth » and « Anse Passable », grey mud. Depth 50 m.

Dimensions :

Length : ♀, 0,82 mm; $\alpha = 29{,}3$; $\beta = 4{,}55$; $\gamma = 7{,}32$; V. = 54 %.

$$\frac{0 \quad 180 \quad 440 \quad 708}{8 \quad 28 \quad 28 \quad 20} \quad 820\ \mu.$$

Head end conical, rounded anteriorly, bearing 6 labial papillae, a crown of 6 labial setae and a third crown of 6 cephalic setae. The labial setae measure 28,5 % of the corresponding diameter, the cephalic setae 44,5 % of the corresponding diameter. Buccal cavity inconspicuous. Amphids circular in outline, very large, 77 % of the corresponding diameter, spiral in structure and composed of 5 ½ windings. Tail long and slender, with a flagellum which occupies about 52 % of the tail. Tail 6,6 anal diameters long. Tip of tail beset with some small setae. Cuticle bare, no transverse striations.

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